CRANFIELD UNIVERSITY

SCHOOL OF APPLIED SCIENCES

MSc Design for Sustainability

Academic Year 2005-2006

A. AUBREE

EXPLORING THE DRIVERS OF AND BARRIERS TO MORE SUSTAINABLE FOOD SUPPLY CHAINS

Study of different approaches to the production and consumption of French beans

Supervisor: Dr. Mark Lemon

September 2006

ABSTRACT

This thesis is aimed at exploring the issues involved in the creation and the development of more sustainable food supply chains, by looking at different approaches to the production and consumption of French beans and analysing the whole chain of production, distribution, marketing and consumption.

The project encountered many challenges: gaining a broad view of how food supply chains work and identifying the drivers of, and barriers to the creation and development of sustainable alternatives to the current model of global and industrial food production. To do that, the project has been split into four distinct components objectives: firstly the creation of a framework under which a particular model of food production and consumption could be characterised as sustainable, to provide a checklist of the issues for the analysis of different models of production and consumption. This analysis was conducted as much as possible in France as well as in the UK and the approach was split into three phases of research activity: producers, retailers and consumers. Data was collected from a wide range of stakeholders along the supply chain and the key issues of education, motivation and redesign of the relationships at the different levels of the supply chain were identified. These have then been built into suggestions of intervention, which should help the different actors of the chain be more involved in the development of sustainable alternatives.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

FIGURES

TABLES

SYMBOLS AND ABBREVIATIONS

AMAP: Association pour le Maintien de l'Agriculture Paysanne
BiTC: Business in the Community
CAP: Common Agricultural Policy
CDC: Centre for Disease Control
CGIAR: Consultative Group on International Agriculture Research
CR: Corporate Responsibility
CSA: Community Supported Agriculture
CSR: Corporate Social Responsibility
DEFRA: Department for Environment, Food and Rural Affairs
EAFL: East Anglia Food Link
EISA: European Initiative for Sustainable Development
ETI: Ethical Trading Initiative
EU: European Union
FAO: Food and Agriculture Organisation
FDA: Food and Drug Administration
FIDH: Federation Internationale des Droits de l'Homme
GM: genetically modified
GRI: Glocal Reporting Initiative
IERC: International Ecotechnology Research Centre
ISCOM: Institute for Sustainable Commodities
ISO: International Standards Organisation
NGO: Non-governmental Organisation
SWOT: Strengths-Weaknesses-Opportunities-Threats
UN: United Nations
WTO: World Trade Organisation

Chapter 1 Introduction

1.1.   Affiliates

The research has been conducted during three months by Anne Aubrée, French student at Cranfield University in Design for Sustainability, and tutored by Dr Mark Lemon, sociologist with the International Ecotechnology Research Centre (IERC) at Cranfield University. It was sponsored by the Institute for Sustainable Commodities (ISCOM), a Dutch-based not-for-profit foundation born in 2000 whose core mission is to make a substantial contribution to the development of sustainable modes of production and sustainable chain management. ISCOM gives support to companies in developing a sustainability strategy, with the objective in developing countries to take part in poverty reduction among small-scale farmers. Its action applies at (inter)national, European and regional levels, and entails organisational and technical aspects. Currently ISCOM is carrying out different projects in Africa and in the EU, sponsored by organisations such as the Dutch Ministry of Environment or the European Commission. It also plays a central role in the design, implementation and follow-up of projects such as the Umoja project, Kenya, aimed at organising small-scale farmers into a viable business entity focusing on the export of French beans to the EU.

1.2.   Context of the research

"In the modern global economy, international supply chains are increasingly sourcing the products we buy from all over the world. This has increased the diversity of goods and services available to the consumer, but also the potential for environmental damage". (Department for Environment, Food and Rural Affairs, 2003).

For millennia populations around the world have grown their food in a localised and self-sustaining manner. However, a new global and industrialised agricultural model has been imposed to these populations, based on massive chemical inputs, invasive technologies, corporate control and huge supply chains (Barker, 2002). A supply chain is defined by R. de Man et al. (2006) as the set of linkages from raw materials through intermediate products to end-products and finally to consumption. Food has become a commodity, exactly like a garment or a piece of furniture, wherever on Earth. This mode of production poses many environmental and health issues, such as a large-scale downstream pollution due to the required

1

long-distance transport of the food, or the appearance of new food-borne illnesses. Moreover, the farming activity has become hardly financially viable, leading to the domination of the food sector by a small number of multinational corporations and a huge loss of social and cultural capital. However, this model is still successful, and one of the main reasons of this success is that it is perceived as cheaper than the traditional one. In reality the external costs of the production of our food are not taken into account in the price we buy it. Instead we pay these externalities under the form of taxes, health fees, and other subsidies for farmers.

Therefore, the real question is not why the food production system needs to be more sustainable, but how we can intervene to change it. There are already some policies and regulations around international trade issues. However, the move towards more sustainable supply chains needs willingness to change at every stage of the product chain, from production to consumption, and as ISCOM claims "the creativity, the innovatory capacity and willingness to take risks of entrepreneurs" (ISCOM, 2006).

1.3.   Aims and objectives

The aim of the thesis is to identify the issues involved in the creation and development of more sustainable food supply chains. The project has been split into four main objectives (see fig 1-1):

- The creation of a qualitative, systemic framework for characterising the sustainability of different models of food production and consumption;
- The study of different approaches to the production and consumption of French beans by pursuing a multi-technique methodology (documentary analysis, case studies, engagement with different types of stakeholders).
- The identification of the barriers of, and drivers to more sustainable food supply chains.
- The suggestion of improvement opportunities and interventions at different levels to make the food supply chains more sustainable.

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│  STUDY OF DIFFERENT APPROACHES TO THE │
│  PRODUCTION AND CONSUMPTION OF FRENCH │
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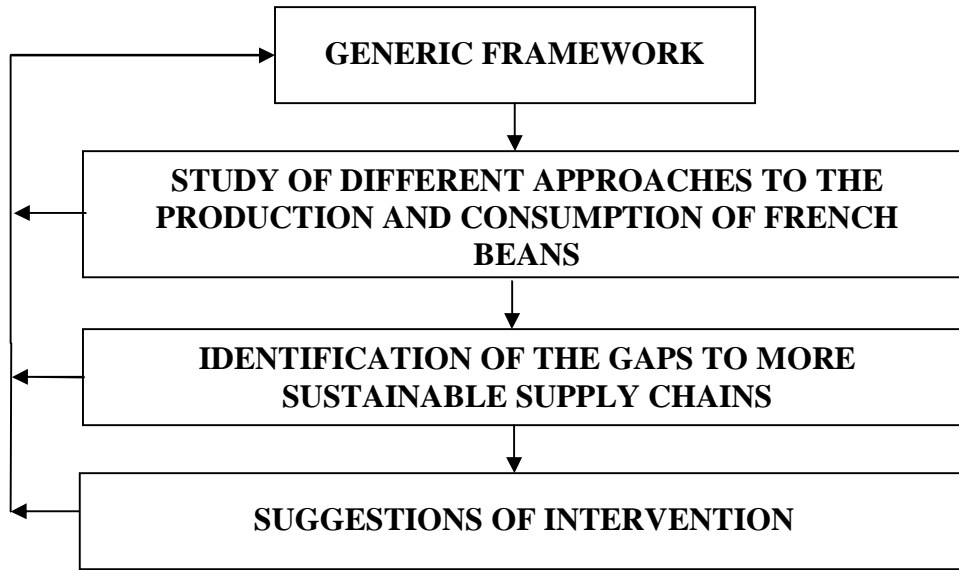
Figure 1-1: Objectives of the thesis

1.4.   Thesis outline

This thesis consists of three main parts:

The first part is an extended literature review, which presents the background story and the issues of the current model of industrial and global food production and consumption, highlights the progress made towards more sustainable supply chains, and finally presents some examples of successful alternatives. The aim of this part is to outline the problem tackled by the research and to try to give as complete a picture as possible of the latest researches around sustainable production and consumption.

The second part of this thesis presents the methodology adopted for the study, the work carried out to achieve the objectives and the results obtained.

Finally, the third part of the thesis is an extended discussion and consideration of the drivers of, and barriers to more sustainable food supply chains and the suggestion of improvement opportunities and interventions at different levels.

Chapter 2   Issues of the global and industrial model of food production and consumption

2.1   Introduction

Through most of their history, humans have evolved in close connection with nature. As Pretty (1997) highlighted, since their divergence from apes, humans have been hunter-gatherers for 350,000 generations, then mostly agriculturalists for 600. During all this time, agricultural knowledge and know-how have been embedded in local cultures. Diverse models of crops and food production have been developed to fit the local ecosystems, climates, natural resources, cultures and tastes. Food was grown locally for local communities, creating an accountability and responsibility to maintain a balance of all the natural resources (Barker, 2002). Then suddenly humans have become industrialised in some parts of the world for 8 to 10 generations and lately dependent on industrialised agriculture for just 2 generations. Globalisation has further reinforced the changes in our modes of production and consumption: new diets have appeared, food is eaten far away from the place where it is produced, is processed and packaged before being consumed etc. Food has become a commodity, without anymore geographical or cultural meaning. As Andrew Kimbrell (2002) wrote: "we have been transformed from a nation of farmers, with our hands and minds linked to the soil, to consumers lined up in supermarkets to buy an array of slickly packaged food products about which we know very little."

The main consequence of the agriculture industrialisation has been a huge increase in productivity: since the beginning of the 1960s, total world food production grew by 68 per cent in Western Europe, by 145 per cent in developing countries and doubled in the US (Pretty, 1997). Despite that over the same period world population has grown from 3 to 6 billion, during the last 35 years per capita food production has actually grown 16 percent faster than the world's population (Kimbrell, 2002). However, this has not yet led to a significant reduction of hunger in the world. At the turn of the 21st Century, there were nearly 800 million people who were hungry and who lacked adequate access to food, mainly in developing countries but also in industrialised countries (Pretty, 1997). For example in the US, the largest producer and exporter of food in the world, 11 million people are food insecure and hungry, and a further 23 million are hovering close to the edge of hunger (Pretty, 1997).

4

2.2 Characteristics and features of a global and industrial food production system

As Ikerd (1993) explains, the basic function of agriculture is to convert solar energy into an energy form that will provide human food, clothing, and shelter. Over time, however, farmers have changed from being basic producers to being primarily converters of purchased inputs into raw materials. Indeed, Kirschenmann (1991) explains that the industrial model of agriculture treats the farm like a factory, with inputs and outputs, and considers fields and animals as production units, the aim being to reap huge corporate profits (Ikerd, 1993). Therefore productivity has to be increased with more cereals and animals per hectare, more meat and milk per animal, more food output per person employed (Pretty, 1997). As in every industry the means to achieve that are specialisation, mechanisation, routinisation and enhanced competitiveness in order to achieve economic and physical efficiencies through large-scale production and reduction of the fixed costs (Ikerd, 1993). Therefore, the agricultural landscape has been heavily modified, and now looks like infinite and massive monotone fields of monoculture, to enable farmers to work with huge and heavy machinery.

Example of monocultures with spaces for heavy machinery

At the same time, the number of stages along the food supply chains increased significantly, intermediaries being necessary to travel and prepare the food produced at the other side of the Earth. The intermediate stages involve at least the transportation, packaging, retail and advertising of the products. Barber (2000) explains how after being prepared and packaged, most of the food is loaded into huge cargo boxes and shipped or flown thousands of miles away, later carried by refrigerated railroad cars and/or trucks to a warehouse to perhaps wait for weeks or even months, before ending on a grocery shelf or serving platter.

However, the affordability and implementation of these changes cost a lot. They are therefore only feasible on large farms and large corporations that have the financial, managerial and technical means to compete on such a global scale (Kimbrell, 2002). Increasingly, one business owns a whole piece of the food chain, leading now to the domination of the international food trade by just 20 multinational corporations (Bruges, 2004). One of them, Monsanto, described this trend in 1998 as follows (p. 162) "what you are seeing is not just a consolidation of

5

seed companies; it's really a consolidation of the entire food chain. (...) Monsanto plans to launch a new water business, starting with India and Mexico, since both these countries are facing water shortages. These are the markets that are most relevant to us as a life science company committed to delivering food, health and hope to the world, and in which there are opportunities to create business value."

At first impression, this large-scale industrialisation of our food production systems may look good. However, many signs now demonstrate that they are in crisis, and notably the growing number of food scandals such as bird flu, BSE, salmonella etc. As Pretty (1997, p.54) explains: "Agriculture is unique as an economic sector; it does more than just produce food, fibre, oil and timber. It has a profound impact upon many aspects of local, national and global economies and ecosystems (...) and affects the very assets on which it relies for success".

2.3   Issues involved in the globalisation and industrialisation of the food production systems

2.3.1. Environmental degradation

Industrial food systems have huge impacts on the environment due to the intensive use of non-organic methods and techniques that do not respect natural processes. The Royal Society and the National Academy of Sciences, the leading scientific bodies of Britain and the US, said in a joint report in July 2000 (Bruges, 2004, p.136): "Modern agriculture is intrinsically destructive of the environment. It is particularly destructive of biological diversity. The widespread application of conventional agricultural technologies such as herbicides, fertilisers and tillage has resulted in severe environmental damage in many parts of the world."

The objective here is not to make an exhaustive list of the damages caused to the environment. However, some points need to be described to gain a better understanding of how this model of food production works, and in particular the massive use of chemicals. Worldwide, 5 million tons of pesticides are applied to crops every year (Badgley, 2002) and one of the most serious consequences is a massive loss of topsoil. Warshall (2002) explains indeed how the application of chemicals degrades the structure and texture of the most fertile part of earth from which all food is grown, making it unable to retain moisture, organic matter and nutrients. The consequence is that eighty percent of agricultural lands now show moderate to severe soil erosion, and for instance in the United States, the average

rate of soil erosion is the equivalent of one inch in 20 years, while the natural formation of an inch of soil is a 300- to 1000-year process (Badgley, 2002). Therefore, more chemicals are needed to replace the nutrients lost which in turn worsens the situation. In addition, these chemicals are less and less efficient and have huge impacts on the world biodiversity. Indeed, Bruges (2004) explains that synthetic chemicals offend the first principle of sustainability as they have not formed part of life's evolutionary process. The species targeted by pesticides are regularly adapting to these chemicals, forcing farmers to use stronger chemicals in bigger quantity, which leads to the death of other harmless species. Moreover, the consequence on biodiversity are increased by the development of monoculture crops, which are more susceptible to insects, blights, diseases and bad weather conditions, and by the use of heavy methods and machinery which destroy wildlife habitats (Badgley, 2002). Today, according to Pretty (1997), one in four mammals and one in eight bird species face a high risk of extinction and each year, the world is losing at least 1000 species.

Another massive threat for the sustainability of food production comes from irrigation, which while reinforcing the loss of topsoil by accentuating the flow of nutrients and organic matter to groundwater and rivers, is taking part in the problem of water scarcity. Unnatural irrigation-based farming is often highly inefficient, nearly half of the water never making it to the fields (Briscoe, 2002), and water is taken from sources more quickly than they are replenished. The problem is of great concern in developing countries which tend to grow more and more 'luxury' non-adequate crops such as corn to respond to the need of the industrialised countries, but these crops are water-consuming and therefore not adapted to lands with limited availability of water.

Furthermore, globalisation of the food production systems adds to all these bad consequences a large-scale downstream pollution, due to the required long-distance transport of the food. The consequences are the release of huge amounts of CO_2 in the air due to the burning of fossil fuels, hence global warming and air pollution. For example, according to Bruges (2004), 1,000 grams of CO_2 are emitted from transporting 1 kg of apples from New-Zealand, while it is just 50 grams for locally grown apples. Finally, all these damages are accentuated by the changes in our consumption patterns. As Pretty (1997) highlighted, one of the most

important changes in the world food system come from an increase in the consumption of livestock products due to increased urbanisation: meat demand is expected to double by 2020. However, the tendency to eat more meat is not sustainable. For instance, ten acres can produce either one ton of beef or between 50 and 100 tons of grains, pulses and vegetables (Blatsou, 1996; Bruges, 2004)

2.3.2. Health risks

"Having mostly conquered hunger in industrialized countries, it is a sad irony that food is now a major source of ill health. We eat too much, we eat the wrong mix of foods, and we get ill from food-borne illnesses". (Pretty, 1997)

The industrialisation of the food production systems makes food look safer and more sterilised than it was before. In reality health risks have increased massively and the nutritional quality of the food has globally decreased: for example, since 1940, the iron in spinach has dropped 60%, broccoli has lost 75% of its calcium, carrots have lost 75% of their magnesium, and watercress has lost 93% of its copper (Bruges, 2004). On the other hand, the health risks are increased by the intensive use of toxic chemicals in food chains. According to the Food and Drug Administration (FDA), at least 53 pesticides classified as carcinogenic are applied in massive amounts to all major food crops across the US (Kimbrell, 2002) and we all now have 500 synthetic chemicals in our bodies, including dioxin and PCBs (Bruges, 2004). Cancers are the first health consequence, especially for farmers who are massively exposed to contamination, but also for customers due to residues left in food. And the problem is not going to slow down, as the overall pesticide use is still constantly rising: since 1989, overall pesticide use has risen by about 8 percent, or 60 million pounds (Kimbrell, 2002).

New diseases called food-borne illnesses have also appeared during the last decades such as salmonella and E.coli pathogens, due to the transmission of animal diseases through spreading of fertilisers and sewage sludge on crops and to industrialized processing and long-distance shipment (Kimbrell, 2002). According to the Centre for Disease Control (CDC) in the US, between 1970 and 1999, food-borne illnesses increased more than tenfold (Kimbrell, 2002). Furthermore, health risks are increased by a growing resistance of humans to antibiotics due to the entry in the food chain of residues of antibiotic treatments given to animals.

According to Bruges (2004), in 2003, in Britain alone, it is estimated that 5,000 people died from infections resistant to antibiotics.

Yet, industrial farming is not the only cause of health risk for humans. The changes in our consumption patterns and diets also lead to new diseases due to the presence of too much sugar, calories and preservatives in processed food, and the consumption of more meat and fewer traditional cereals. These changes are encouraged by the media advertising from food companies. A study from Consumers International in 13 developing countries (Barber, 2000) showed that most of the advertising promotes food high in fat, sugar or salt antithetical to a healthy, balanced diet (see table 2-1). As a result, one in seven people in industrialised countries are now clinically obese, and five of the ten leading causes of death are diet related (Pretty, 1997). The globalisation of the food productions systems is also responsible for the spread of new diseases and the apparition of pandemics. For example, 40,000 tonnes of poultry meat were imported in 2003 from Thailand to the UK, increasing the risk of development of the avian fly virus disease (Pretty, 1997).

Rank	Advertiser	US$ millions (1998)				
		Total world spending	Africa	Asia	Latin America	United States
2	Unilever	3,428.5	43.4	643.2	373.3	691.2
3	Nestle	1,833.0	11.1	299.4	209.2	273.8
8	Coca-Cola Co.	1,327.3	22.6	265.2	269.2	315.8
11	Mars Inc.	1,069.6	0.0	70.1	30.2	276.6
13	Philip Morris Cos.	1,980.3	0.1	23.7	109.5	1,264.4
20	McDonald's Corp.	1,164.0	0.0	209.3	46.1	571.7
22	Danone Group	588.6	0.0	0.0	43.8	38.6
28	Kellogg Co.	705.7	0.0	28.1	71.1	324.3
31	PepsiCo	705.7	0.5	49.5	125.6	339.9
42	Diageo (Burger King)	917.1	0.2	25.1	7.6	663.1
56	Sara Lee Corp.	340.2	0.0	0.0	0.0	156.8
65	Bestfoods	220.1	0.0	0.2	4.7	70.9
72	Tricon Global Rest. (Pizza Hut, Kentucky Fried Chicken, Taco Bell	637.0	0.0	87.7	21.5	502.6
73	Cadbury Schweppes	256.3	0.0	35.3	7.4	128.0

Table 2-1: Media ad spending by food companies (Barber, 2000)

2.3.3. Impoverishment and hunger

"World hunger is not created by lack of food but by poverty and landlessness, which deny people access to food." (Kimbrell, 2002)

An ambiguous effect of industrial agriculture is that the price of food has hugely decreased, mainly due to the increase of productivity and the development of new technologies, Indeed, according to Bruges (2004), between 1980 and 1997, the price of sugar dropped 73%, cocoa 58%, rubber 52%, rice 51%, cotton 36%, and copper 30%, and prices have continued to drop. However, the price of inputs and technologies, as well as the number of intermediaries along the supply chain are increasing, reducing significantly the proportion of money returned to farmers. Fifty years ago, farmers in Europe and North America received as income between 45-60 per cent of the money spent by customers on food. Today, that proportion has dropped dramatically to just 7 per cent in the UK and 3-4 per cent in the US, though it remains at 18 per cent in France thanks to heavy subsidies from the government (Pretty, 1997). Thus, more and more farmers are forced to have off-farm activities and to accept lower wages than they might accept normally to ensure an adequate living: according to Hyman (1990), only about one-third of all farmers consider farming to be their principal occupation and about 75% of farmers' incomes come from off-farm sources (Ikerd, 1993) Therefore, only big corporations are able to survive by increasing productivity, reducing fixed costs and driving the market to have the lowest costs and the highest profits. In France, while there were 9 million farms in 1880, they were only 1.5 million left by the 1990s (Pretty, 1997).

Moreover, the situation is even worse in developing countries where farmers have to unfairly compete with the subsidised farmers of Europe and North America. Bruges (2004) explains indeed that they often become dependent on big corporations, which with the globalisation and free trade that it implies, can drive down the environmental and labour standards, leading to the impoverishment and degradation of the labour and living conditions of the poorest. And when farmers remain independent, they are forced to grow 'luxury' high-profit crops which are recommended for exportation due to the decreasing economic viability of farming. In addition, with the enclosure of farming by large corporations, small farmers are forced to sell their farms and to move to the cities, where they contribute to the oversupply of low-wages labour. According to Kimbrell (2002), fifty years ago, only

18 percent of the population of developing countries resided in cities; by the year 2000 this figure jumped to 40 percent. People are thus not able to cultivate their own food for subsistence anymore. Therefore, linked with impoverishment, and yet perhaps the most surprising negative effect of industrial agriculture, hunger has actually increased in many parts of the world (see table 2-2 below).

	Undernourished people (millions)			
	1969-71	1979-81	1990-92	1995-97
Sub-Saharan Africa	89	126	164	180
Near East & North Africa	45	22	26	33
East & South-East Asia	504	406	283	241
South Asia	267	338	299	284
Latin America & the Caribbean	54	46	59	53
Industrialized countries	n/a	n/a	9	8
Countries in transition	n/a	n/a	20	26
				Source: FAO (1999)

Table 2-2: Number of undernourished people (1969-1997) (Barber, 2000)

2.3.4. Loss of cultural and social capital

Finally, global and industrial food production has resulted in a huge loss of cultural and social capital. Through most of history, farmers have worked with nature, but with the industrialisation of agriculture and its side-effects such as urbanisation, knowledge of the natural processes and indigenous cultures have disappeared. Low-labour industrial farming has also led to the deterioration of the local communities: rural people are moving, businesses are closing, crime is increasing etc. For example in Britain, 42% of the rural parishes have no shop, 43% have no post office, 49% have no school, 75% have no daily bus service and 83% have no doctor (Bruges, 2004). Rural landscapes have been completely transformed, from the small villages to the fields through to the commons that have been bought by corporations for l profit.

But the loss of culture and knowledge concerns also the customer at the end of the supply chain who has no link anymore with the producers, hence a loss of knowledge of how the food has been produced, of the natural processes or the meaning of its price. Food is just a commodity that can be bought as clothes or books. Cultural aspects associated with biodiversity are also hugely damaged. As industrial farming favours high-yield varieties of crops for profit, the natural diversity of nearly every major crop in terms of varieties, colour and size has already been significantly reduced (Kimbrell, 2002). The UN Food and Agriculture Organization (FAO) estimate indeed that more than three-quarters of agricultural

genetic diversity was lost in the past century (Kimbrell, 2002). Finally, fruits and vegetables are grown more rapidly and often harvested before maturity to ensure they can support the long-distance journey and the different stages of the supply chain. Even though they usually look succulent without any default, they often are rubbery and flavourless. With generations, knowledge of the real aspect, smell and taste of the vegetables and fruits is progressively lost.

2.4   Biotechnology: a solution or a new risk?

Biotechnologies are often claimed as the solution to the problems caused by the modern food systems. There are two principal types of biotechnology seeds already in production: herbicide resistant (allowing farmers to spread more chemicals with 'no' impacts on the crop), and pest resistant (to withstand the herbicide or producing its own herbicide). These technologies may seem at first sight harmless and even positive, enabling farmers to increase productivity and to reduce environmental degradation, costs and health risks. Yet, there are more and more opponents to these new technologies who believe that they will only consolidate control of the world's food supply in the hands of a few large corporations, destroy biodiversity and food security, and drive self-sufficient farmers off their land (Kimbrell, 2002), that is only reinforcing the already existing problems.

There is a popular perception that genetic engineering is just a development of plant breeding techniques that have been practiced since the dawn of civilisation (Bruges, 2004). And big corporations like Monsanto are reinforcing this perception. However, the possibility that a tomato may now carry the gene that stops a fish freezing obviously overcomes the barriers that have always existed in nature's evolution. More and more research tends to demonstrate that there are some dangerous biological risks associated with engineering food (Bruges, 2004). Cultural issues may also be feared, in particular regarding religious aspects, for example for Muslim people if pork genes were carried by vegetables. New genetically engineered technologies such as 'terminator' are currently created to produce a sterile seed after a single growing season, insuring that the farmers cannot save their seed and become dependent from corporations every season contributing to starvation (Kimbrell, 2002). But even worse, plants that are sterile unless their own chemicals are applied, or plants whose resistance to diseases have been removed, and irradiation of the food contaminated by too long supply chains are other projects currently developed. Wisdom would advise to wait for the definitive results

regarding the real impacts of these biotechnologies. Yet, according to Kimbrell (2002), up to 60 percent of processed foods in the US already have some genetically engineered ingredients.

2.5 Conclusion

While more food is produced at the expense of the environment, human health and culture, the unequal access to food and food-producing resources leave more people hungry and poorer, and the only responses found to these problems are to increase the causes (see fig 2-1). However, the current model of global and industrial production of food is still successful, and one of the main reasons for this success is that it is perceived as cheaper than the traditional one. In reality the external costs of the production of our food are not taken into account in the price we pay for it. Instead we pay these externalities in the form of taxes, health fees, and other subsidies for farmers.
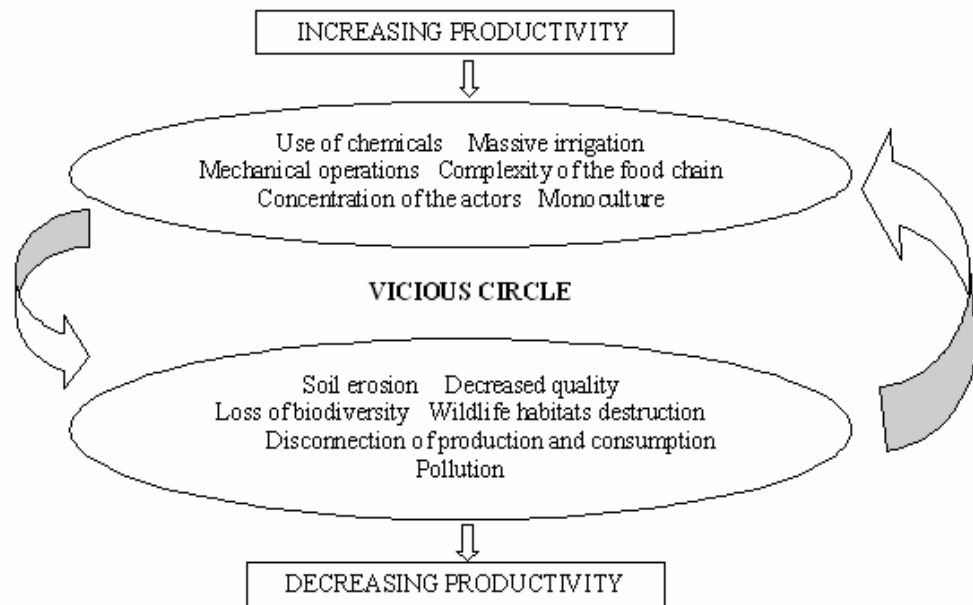
Figure 2-1: Vicious cycle industrial food production

Therefore, achieving food security and sustainable food systems requires changing the entire food system. Fortunately, citizens, communities and organisations of all kind around the globe are beginning to develop alternative strategies that respect the principles of sustainability. Many of these alternatives may simply be systems that have been successful in the past. But at least the change in thinking and in practice is radical.

Chapter 3   Sustainable food production and consumption

This chapter builds the theoretical background of the thesis that led to the understanding of the issues and stakes of more sustainable food production and consumption patterns and to the development of a methodology for the research.

3.1   What does sustainability mean in the context of food production and consumption?

3.1.1. Introduction to the concept of sustainability

The concept of sustainability was introduced in 1987 by the UN's Bruntland Commission in its report Our Common Future: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). It is now commonly used as the generic definition but has also led to the production of a number of other definitions differing in scope, scale, level and salience of components (Castillo, 1992). According to Tilzey (1998), this concept has been a response to the growing concern of the world's population about the exploitative and assimilative capacity of the environment to support human lives and wellbeing now and in the future, and therefore is, taken at face value, a measure of the degree to which any practice can be continued before the accrued costs become insurmountable (East Anglia Food Link).

Economic sustainability has long been the main criterion for judging the long-term viability of any activity. However, the social and environmental costs, even though more difficult to assess and understand, have potentially more impacts than the economic aspects on the sustainability of this activity. That is why Bell and Morse (2003) have completed the definition of the Bruntland Commission as "a development which is respectful of the
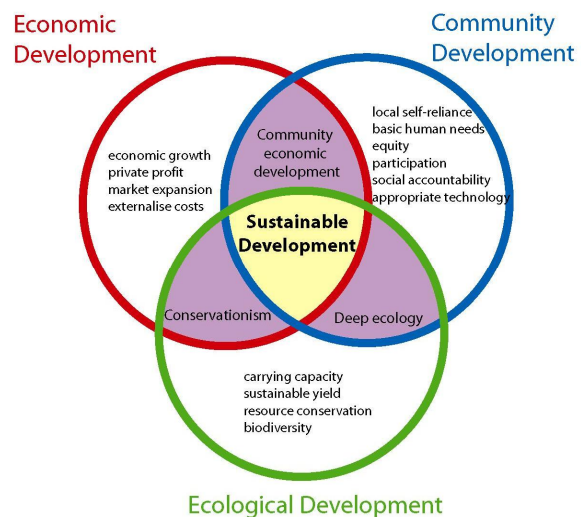
Figure 3-1: Interactions between ecological, economic and social development (Bell and Morse, 2003)

14

environment, technically appropriate, economically viable and socially acceptable to meet the needs of present generations without compromising the ability of the future generations to meet their own needs" (see fig 3-1) (Bell and Morse, 2003). The stake for business is thus not only to limit its damage on the environment, but also to consider the interactions between ecological, economic and social development.

3.1.2. Sustainability in the context of food production and consumption

According to the European Union, sustainable consumption and production is at the core of sustainable development, encompassing the three dimensions: economic, social and environmental (UK Department for Environment, Food and Rural Affairs, 2003). It is defined by the UK Government as a "continuous economic and social progress that respects the limits of the Earth's ecosystems, and meets the needs and aspirations of everyone for a better quality of life, now and for future generations to come" (UK Department for Environment, Food and Rural Affairs, 2003). In practical terms, this means getting more from less:

- More efficient and profitable production, using less raw material
- More value added to a product, with less pollution and waste in the process
- More consumer needs fulfilled, with less energy, water or waste.

Therefore, in the food production and consumption context, what does sustainability really mean? Once again, there are many different definitions but all of them have a common ground, which is to improve the quality of life while ensuring social, environmental and economic sustainability (Barbier, 1988). Some NGOs have tried to develop frameworks with a list of criteria giving a clearer idea of what a sustainable food system could look like. For example, Anglia Food Links used a work by Sustain and AlimenTerra, to define a sustainable food system as one that attains as many as possible of a list of eleven values shown in table 3-1.

Agriculture occupies a central place in this sustainability debate, due to three main reasons (Tilzey, 1998): it occupies a far greater proportion of the land surface than any other economic activity, it is both a creator and destroyer of environmental assets and resources, and distinguishes itself by its dependence on natural resources (land, soil, clean water, air etc.) and natural processes (propagation, growth, recycling etc.). There is a broad range of definitions of sustainable agriculture, such as "farming that makes the best use of nature's goods and

services while not damaging the environment" (Pretty, 1997) , or "ecologically sound, economically viable, socially just, humane and adaptable" (Reijntjes, 1992). However, beyond these definitions, it is interesting to highlight the idea that sustainable agriculture is more than using new methods and techniques; it is actually a management-based approach. Indeed, Pretty (1997) explains that sustainable farming minimizes the use of non-renewable inputs that damage the use of farmers' knowledge and skills and makes productive use of people's capacities to work together. Likewise, the Technical Advisory Committee's report to the Consultative Group on International Agriculture Research (CGIAR) defined sustainable farming systems as not simply a collection of crops and animals to which one can apply this input or that input and expect immediate results, but the farmer's unique understanding of his immediate environment, both natural and socio-economic (Castillo, 1992)

Values	Meaning
Proximity	Food should originate from the closest practicable source
Health	All food should form part of a balanced diet, with no harmful biological or chemical contaminants
Fairness	Fairly or co-operatively traded between producers, processors, retailers, consumers
Non exploitation	Not exploiting of employees in the food sector in terms of pay and conditions
Environment	Environmentally beneficial or benign in its production (e.g. through organic methods and use of biological controls)
Biodiversity	Maintaining diversity of varieties and breeds across and within localities
Welfare	High animal welfare standards in production and transport
Accessibility	Accessible in terms of geographic access and affordability
Social inclusion	Inclusive of all members of society
Education	Encouraging knowledge & understanding of food and food culture
Truthful	Honesty and transparency throughout the food chain

Table 3-1: Values of a sustainable food system (East Anglia Food Link)

3.1.3. Implementation of sustainability in practice

In theory, the principle of sustainable food production can be summarised as to use the fewest resources for the maximum food productivity, to rely more on local resources for market niches but also potentially for global market niches and to connect production with consumption (Castillo (1992), East Anglia Food Link, Pretty (1997), Ikerd (1993), Kimbrell, 2002). However, in practice, the approaches to sustainability differ in emphasis, ideology, and impact (Castillo, 1992). Prasad

(1997) insists on the fact that an agricultural production system is location specific, and uniquely determined by interacting physiochemical (soil, climate, radiation etc.), biological (crops, weeds, pests, beneficial organisms etc.), managerial and socioeconomic elements that satisfy specific objectives. Therefore, the implementation of sustainability in production systems can only be based on empirical experience, and throughout the entire product chain it is of great importance to gain insight into the opportunities to implement sustainable business, to rely on innovative arrangements of parts within whole systems capital and to substitute inputs by knowledge and information (Ikerd, 1993).

In addition, the broad scope of sustainability brings conflicts and necessitates addressing the problems from different points of view; choices must continually be made to balance the conflicting interests (Reijntjes, 1992). Therefore, trade-offs inhere in the implementation of sustainability in production systems. For example, the improvement of certain aspects of sustainability may result in practices that are less sustainable on other measures, like importing food by air instead of shipping to have fresher and healthier food.

3.2   Driving forces behind more sustainable food supply chains

There are three types of driving forces behind more sustainable patterns of food production and consumption:

3.2.1. Consumer demand

"The tremendous citizen movements that are becoming more and more visible, are demanding that communities and citizens have a voice and a choice about the quality and quantity of food they eat, the system of production they use to grow and process food, the quality of the environment and life-support systems in their regions, and other issues relating to justice, equality, and sustainability." (Barker, 2002)

Big corporations and politics now feel increasing pressure from informed consumers, workers and citizens. Indeed, often helped by NGOs and other advocates of health issues, consumers now organise themselves to counteract the lobbying, influence and marketing strategies of the large food corporations in order to be able to choose food knowingly. This movement is known to be born after the

publication of Silent Spring by Rachel Carson in 1962, describing how the US's birds were dying because of the use of DDT and other pesticides. The consequence has been a progressive change in consumer's minds, and the creation of numerous organisations fighting specific areas, such as the misuse of pesticides or the use of genetic engineered food. For example, the Slow Food Movement was created in 1986 by Carlo Petrini, an Italian freelance restaurant reviewer, after the arrival of MacDonald's in Italy to defend the traditional Italian food and wine. According to The Independent (Popham, June, 17th 2006), the associations progressively developed to build relationships with producers, campaign for traditional foods and encourage cooks to use local foods. The first University of Gastronomy in Pollenzo, Italy, and the "world meeting of food communities" were created by the movement to enable farmers, university teachers and cooks to interact, share knowledge and information. The organization counts now 83,000 members with around 800 branches in 122 countries all over the globe (Popham, June, 17th 2006).

However, to gain more transparency and the ability to choose their food, consumers also fight more simply by changing the way they consume. That is how alternative movements such as organic or fair-trade have appeared and been successful. As Pretty (1997) explains, each time consumers buy food, their choices make a difference to nature and communities somewhere. Indeed, the system is made in such a manner that ultimately investment by business and government is dependent upon consumers (Barber, 2000): consumers can influence businesses by refusing to buy their products and governments by expressing their discontentment. However, advertising, marketing and public relations campaigns tend to avoid that by shaping customers' perceptions, and leaving them uninformed or unconcerned. A good example is the boycott of Nestlé from 1977 to 1984 whose aim was to protest against the export and marketing of breast milk substitutes in developing countries. An advertising firm was hired to convince consumers of the positive change of the company and when it appeared that Nestlé had not delivered all its promises, the initial momentum of the boycott was lost. Barber (2000) explains that "the visibility and initial success of the boycott demonstrate the power of consumer action; the results indicate the difficulty of taking on a corporation with annual sales of 50 billion dollars".

3.2.2. Legislation

Another very important aspect that must be taken into consideration is the influence policies and regulations have on the food production systems, under the form of trade policies, price supports, taxes, subsidies, incentives and controls. Thus, to be sustainable these systems must be compatible with the socio-political environment within which they operate (Yunlong and Smit, 1994/7) but also encouraged by them. According to the neo-classical view now widely accepted by governments, command and control regulations are an inefficient way of realising environmental objectives (Berkhout et al., 2003). New policy instruments are thus adopted to complement these regulations, such as voluntary or negotiated agreements, information-based instruments and 'hybrid' approaches that seek to combine the better attributes of the different instruments (see Appendix 1). In addition, an emphasis is now put on the implementation of environmental policy. The 'responsive regulation' concept proposed by Ayres and Braithwaite (1992) suggests that different strategies can be adopted to take account of variations in the capacity and commitment of regulated actors (Berkhout et al., 2003).

Since the mid-1980s, efforts have been made to take into account environmental aspects in agricultural policy reforms, and notably in the European Common Agricultural Policy (CAP): "Sustainable Development must encompass food production alongside conservation of finite resources and protection of the natural environment so that the needs of people living today can be met without compromising the ability of future generations to meet their own needs" (European Initiative for Sustainable Development in Agriculture, 2001). The reform of the CAP in 2000 included much greater emphasis on rural development, making this the second 'pillar' of the CAP, with respect for the environment at its core and principles such as the respect of certain basic environmental standards by farmers without any financial compensation, the application of the polluter pays principle and payments for environmental commitments that go beyond good farming practice (European Commission, Directorate-General for Agriculture, 2001). The Soil Association even recognises in its report 'Organic works' that the emphasis of CAP payments has shifted from supporting traditional productivity, to rewarding farmers for providing public goods of environmental management and natural resource maintenance.

However, even if European countries are required by the CAP to adopt appropriate environmental protection and to encourage and monitor progress towards more sustainable agriculture, there is little consensus on how this should be done. And

the main question concerns the support and subsidies farmers must receive. The Policy Commission of the Future of Farming and Food (Policy Commission on the Future of Farming and Food, 2002) explains that the subsidies paid under the Common Agricultural Policy (CAP) have become part of the problem rather than the solution, by dividing producers from their market, distorting price signals, and masking inefficiency. As a result, it affirms that some farmers have been slow to change and to innovate. That is why Pretty (1997) suggests that certification standards may be the best solution, leaving the choice to customers to decide what are the best modes of production, and to punish them by the market.

3.2.3. Partnerships between industries

The third driving force for more sustainable supply chains is business-led. Indeed, because of a lack of government regulation, or weak controls, partnerships for sustainability are increasingly created in the supply chain by organisations trying to establish their own their "license to operate" through voluntary self-regulation in the supply chain, seeking at the same time endorsement from respectable stakeholders (de Man and Burns, 2006). In many cases, NGOs are involved in these partnerships, either as external stakeholder or full partner. There are two distinct forms of supply chain partnerships for sustainability (de Man and Burns, 2006):

- The business to business ("B-to-B") partnership, possibly with NGO involvement, in which different companies work together for producing a "sustainable" product;
- The industry to industry ("I-to-I") partnership in which groups of companies and/or industry associations from different phases of the supply chain work together to realise minimum standards for sustainable products.

According to R. de Man et al. (2006), there are three main reasons for companies to build these partnerships:

- As we have seen, globalisation and specialisation have mainly contributed to decrease the costs of production and to increase flexibility. Yet, the risk for companies along the supply chain is to lose the control over the supply and as a result, to have bad quality end products and dissatisfied customers, especially in the food industry, where lack of control over inputs can produce significant health risks for consumers and a major loss of trust. Cooperation between companies along the supply chain is therefore initiated to minimize such risks.

20

- During the last decades, the number of scandals involving food companies has largely increased, forcing them to take into account 'reputational risks'. These risks may relate to issues of ecological or corporate social responsibility upstream in the supply chain and may concern practices for which the companies do not have formal liability. Nevertheless companies are considered as accountable for the upstream operations and thus must develop cooperation strategies with their suppliers to encourage better behaviour.

- Another particular factor motivating these initiatives derives from the barriers WTO rules impose on regulatory activities. For example in the case of global supply chains, stimulating sustainable production may be the only mechanism to link the demand of consumers in Europe to the production market, if the developing country is not effectively implementing social or ecological standards prescribed by the importing country. Therefore partnerships are based on international principles or standards. Some examples are ISO (norms of quality and environmental management), Corporate Social Responsibility which consists of integrating social and environmental concerns in the business, or Fairtrade, initiative of cooperation between retailers and suppliers to guarantee minimum social and ecological standards.

However, even if these partnership initiatives contribute to raise awareness about the sustainability agenda along the supply chains, they can sometimes be reproached for being only limited to public relations aspects.

Chapter 4 Successful examples of sustainable alternatives

The term sustainable food supply chain has finally emerged as the synthesis of all the concepts that have emerged or been rediscovered as alternatives to the now conventional model of food production and consumption. In this part, three examples will be presented and their benefits and limitations analysed:

- 'Organic farming' which addresses the social and environmental responsibilities of agricultural production;
- 'Fairtrade' which addresses the social responsibilities of trade;
- 'Community Supported Agriculture' which addresses the social and environmental responsibilities of distribution and marketing.

Of course, these examples are not perfect and have their limitations. However, they represent an important step towards more sustainable food supply chains and already present huge positive effects.

4.1 Organic farming

4.1.1. What is organic farming?

Organic farming has until now been the most successful alternative to industrial and global agriculture. Born with the "back-to-the-land" movements of the 1960s and early 1970s as an ongoing adaptation of indigenous knowledge, it then progressively became an agricultural system "with an attitude", that is a marriage of values and standards for consumers concerned by the safety and environmental issues of conventional agriculture (Sligh, 2002). As expressed by Jim Hightower (2002, p. 271): "at its core, organic farming recognises that agriculture is the art and science of cooperating with nature, rather than always trying to overwhelm it". It thus consists of favouring human and sustainable practices by using a system based on the management of natural and ecological processes (Maynard and Green, 2006): for instance the use of renewable resources, the use of waste and on-farm inputs as much as possible, the control of pests and disease in natural ways such as raising crops and livestock, and the avoidance of synthetic pesticides, herbicides, chemical fertilisers, growth hormones, antibiotics and gene manipulation (Bruges (2004), Maynard and Green (2006), Kimbrell (2002)).

In addition, organic farming is usually associated to local processing and marketing (European Commission, Directorate-General for Agriculture, 2001). Indeed, due to the mixed approach of organic systems, food is produced in small quantity but wide variety, which makes it difficult to respond to the criteria imposed by retailers. Moreover, to respect the integrity of the food produced and avoid the addition of artificial ingredients, the number of stages in the supply chain must be reduced (Sligh, 2002). Thus, as Maynard and Green (2006) notice, organic farming encourages greater business innovation, particularly direct marketing and on-farm processing. A survey by the University of Essex (Maynard and Green, 2006) found indeed that organic farmers were more likely to diversify into other business activities, particularly trading (21%) and processing (16%) enterprises, compared to just 5% and 4% of non-organic farmers respectively. Therefore, organic farming has a huge potential for higher benefits to society and the local economy.

Organic farming has now become one of the most dynamic agricultural sectors in the European Union with a growth of about 25% a year between 1993 and 1998 and around 30% a year since 1998 (European Commission, Directorate-General for Agriculture, 2001). Even though organic food has for a long time been perceived as too expensive, consumers now seem to have accepted the idea of paying higher prices in return for guarantees of quality and food safety. Therefore, as a virtuous cycle, the increasing demand is accentuating the number of farmers moving to organic production and consumers buying organic food, again accentuating the growth of the market. According to the Soil Association on its website, now three out of every four households in the UK buy organic food…

4.1.2. Benefits and limitations of organic farming

According to Maynard and Green (2006), four main reasons may explain this huge success:

- *Health and Environment respect:* thanks to the suppression of chemicals at each stage of the supply chain and the limited processing of the food, organic food has been proved healthier with more essential nutrients and minerals and less harmful compounds. Moreover, due to the respect of natural and biological processes, and notably the ban of Genetically Modified (GM) crops, but also thanks to less road, air transport and packaging, people have the feeling they are reducing their impact on the environment, with less consequences on biodiversity, less pollution and waste.

- *More productivity and incomes for farmers*: small farms are more productive than big ones, as they tend to specialise in high value crops like vegetables and flowers, but also to use more diverse farming systems, and more labour and less inputs per unit area: organic farms, with an average of 36 hectares in the survey, employ 5.23 people per farm, compared to 3.08 jobs for organic farms overall (Maynard and Green, 2006). In addition, the move towards on-farm processing and direct-marketing helps organic farmers to capture a greater proportion of the final sale price of their produce (Pretty, 1997).

- *Reconnecting people with land and nature*: another benefit, although often forgotten, is that organic and local farming helps reconnecting people with land and nature. People gain knowledge of the food they buy, rediscover the values of season and taste, and enjoy more unusual and traditional varieties. In addition, buying locally generates trust, connection and solidarity between farmers and consumers of organic food: research demonstrates that when buying organic food, 71% of consumers expect that the farm workers who produced it should have decent pay and conditions, and 79% believe that it is in keeping with organic values that farmers can be paid and treated fairly (Maynard and Green, 2006).

- *Rural development*: as we have seen, organic farming is a much more diverse, mixed and human-based system than conventional agriculture, therefore requiring a greater range of skills and labour (Maynard and Green, 2006). The first national survey of labour on UK organic farms by the University of Essex (Maynard and Green, 2006), found that organic farming creates 32% more job opportunities than non-organic farming through farming, processing and related services and that there are on average 3.08 jobs per organic farm, compared to 1.28 jobs on non-organic farms. It is also believed that organic farming attracts younger people than conventional farming. All these aspects have other benefits on the rural development, known as the 'multiplier effect': money stays in the local area and is reinvested to provide more benefits (Maynard and Green, 2006). Therefore, as the European Commission – Directorate General for Agriculture has realised in 2001, "as well as environmental advantages, these farming systems can bring significant benefits both to the economy and the social cohesion of rural areas".

Therefore, organic farming seems to be environmentally sound, but also economically productive and socially sustainable. However, there are still polemics about the benefits of organic food production and many critical assessments can be found in the literature. For example, Trewavas (2004) claims that organic agriculture is simply another form of farming with its own problems and explains that organic farming is perceived as good only because it is compared with "poorly managed conventional farms". He also pretends that organic food is perceived as tasting better only because taste is confused with freshness. Finally, to oppose the environmental benefits, he explains that "the environment is complex, its ecology is not well understood and frequently in these complex networked systems the results are often counter-intuitive".

4.1.3. The role of policy and regulation in the development of organic farming

According to the European Commission – Directorate General for Agriculture (2001), the benefits of organic farming have been recognised in the CAP since the late 1980s. The first regulations came into force in 1992 (Regulation EEC No 2078/92 of 30 June 1992) to ensure minimum standards of quality in the organic production of food, as well as in the labelling, processing, marketing and imports of organic products into the EU. Enforcement procedures have also been set up to avoid fraudulent claims of organic status. In March 2000, the European Commission introduced a logo to be used by producers on a voluntary basis which mainly proves to the consumers that at least 95% of the product's ingredients have been organically produced and that the product complies with the rules of the official inspection scheme (European Commission, Directorate-General for Agriculture, 2001). However, each EU country has its own certification body and own logo (see fig 4-1). In the UK, the Soil Association is the UK's main certification body, for approximately 70% of organic food produced in the UK (The Soil Association).

Figure 4-1: Examples of organic logos: Europe, UK and France

25

Furthermore, both the European Union (EU) and the United Nations (UN) have officially recognised since 1999 the social and economic benefits of organic farming and the European Commission has even decided an action plan in 21 actions to expand the organic market in the EU and improve the standards by increasing their efficacy, transparency and consumer confidence, called "European Action Plan for Organic Food and Farming". Nevertheless, in the UK, the Food Standards Agency, an independent government department set up to protect the public's health and consumer interests in relation to food, still estimated in 2001 that "organic food is not significantly different in terms of food safety and nutrition from food produced conventionally" (The Soil Association).

4.2 Fairtrade

4.2.1. What is Fairtrade?

Fairtrade is an alternative approach to the conventional model of international trade. It consists of a trading partnership aimed at sustainable development. The first Fairtrade label was launched in the Netherlands by the Max Havelaar Foundation in 1988 on coffee sourced from Mexico. The international certification body Fairtrade Labelling Organisations International (FLO) was then created in 1997 and control now the process of Fairtrade labelling in 50 countries, by setting international standards, inspecting and certifying the producer organisations (Fairtrade Labelling Organisations International). Today, fifteen food products and four non-food products are concerned by these standards and more than one million producers and workers benefit from Fairtrade labelling (Fairtrade Labelling Organisations International).

Fairtrade consists of ensuring that small and independent producers sell their products to organisations that respect the following guarantees (The Fairtrade Foundation, 2004):
1. A fair and stable price for their products, independent from the variation of the stock exchange and covering the production and living costs.
- A premium paid by customers to enable them to invest in social and economic development projects (see table 4-1). The price is thus calculated by adding a premium plus an 'organic price differential' (if applicable) to the minimum price.

- Advance payments if requested by producers to enable them to invest without falling into debt;
- Contracts that allow for long-term planning and sustainable production practices.

Standard	Product	Minimum price	Premium	Fairtrade price	Volume
Fresh fruits and vegetables	Organic green beans	1023 USD	56.3 USD	1079.3	Million Tons
Fruit juices	Apples	960 USD	96 USD	1,056	Million Tons
Herbs and spices	Organic ginger	€0,57	€0,06	0,63	Kg
Quinoa	Quinoa	€711,00	€85,00	796,00	Ton

Table 4-1: Examples of Fairtrade producer prices and premium (The Fairtrade Foundation, London, UK)

There are typically five types of stakeholders involved in fair-trade partnerships: producers, importing organisations, labelling initiatives, shops with ethical policy and ethical consumers. An example of ethical shop is Starbucks, which during an annual shareholder's meeting in 2000, was asked by Global Exchange to prove its CSR engagement and to promote Fairtrade coffee. The global market is now growing very fast, with a rise in worldwide sales of a third in 2005 (Fairtrade Labelling Organisations International).

4.2.2. Benefits and limitations:

The benefits of fair trading concern primarily workers on plantations and in factories. According to the UK Fairtrade Foundation (2004), labour and living conditions are considerably improved, with health and safety as well as environmental standards, no child or forced labour, the allowance of fair wages, the right to join trade unions and the provision of good housing. In addition, after the certification, progress requirements are recommended to nurture further improvement of the working conditions and product quality. Moreover, the production of food according to Fairtrade standards provides further benefits such as a greater respect for the environment; a personal development and increased participation as farmers must belong to democratic cooperatives; community goods such as community canteen, sport and education, health and sanitation thanks to the premium; and a stronger position in world markets (The Fairtrade Foundation,

London, UK). Finally, the process has also strong and positive impacts on the consumers at the end of the supply chain, as quality and price are not anymore the only factors influencing their decision-making process when purchasing. Customers know more about the production, which is often described on the packaging. The link between the producer and the consumer becomes closer, increasing the quality and the durability of the relationship.

However, the growth of the market seems now limited. Indeed, according to Debora Paiva, researcher at Cranfield University who did a critical assessment of fair-trade, the main issue regarding the development of fair-trade products is the gap between attitude and behaviour of consumers. They all claim being concerned but they are actually not ready to pay more. Thus, retailers seem to be the only one to have the ability to develop ethical sourcing and to make it the norm, by easily touching a huge amount of consumers. However, this supposes that there is more space on the shelf for fair-trade products and that the controls can be trusted, which is the problem of every standard and certification label.

4.3   Community Supported Agriculture (CSA)

4.3.1. What are CSA schemes?

Community Supported Agriculture is another concept developed to encourage more sustainable food production and consumption patterns. It consists of a participatory approach towards sustainable agriculture and is defined by the Soil Association (2001) as "a partnership between farmers and consumers where the responsibilities and rewards of farming are shared". The concept was firstly created in the 1960s in Japan under the name of 'Teikei' (relationship) as an alternative to the industrial model of food production. In 1985, it was developed in the US to help low-income families to have access to quality food. Since the mid-1990s, fifteen countries around the globe, including the Netherlands, Ghana, Canada and the UK, have developed their own CSA initiatives. In Japan, 1 household out of 4 take part in a 'Teikei' (The Soil Association, 2001). The concept is mainly developed in the industrial world as a return to the model of public participation in farming and access to locally and sustainably produced food, but exists traditionally in developing countries.

28

The primary purpose of CSA initiatives is to grow any type of fresh and high-quality food for local consumption. Therefore, many of them are based on small plots of land (generally less than 10ha (The Soil Association, 2001)), production is low input and intensive, hence usually considered as organic even if not certified as such. There are typically up to four groups involved in a CSA farm, even if the relationships and responsibilities between these groups are diverse and unique to each individual CSA (The Soil Association, 2001):

- The farmers who do the day to day work in the farm.
- The consumers who support the farm either financially or in kind, and consume the produce.
- The core association which includes farmers and community members and whose role is to encourage the subscriber to participate actively in preparing the budget, collecting payments, paying the farmers, distributing the food, dealing with legal issues, organising events, recruiting and maintaining CSA members etc.
- Occasionally, agencies that promote various objectives such as primarily health, training and education associated to the concept of CSA.

4.3.2. Different types of CSA:

There are different models of CSA initiatives. However, what is common to all of them is a mutual support between a farm and a community of consumers. In addition, transparency when producing, transforming and selling the produce is researched as much as possible by suppressing the intermediaries and encouraging the proximity of the producer and the consumers. The Soil Association (2001) groups the different models of CSA into the main following categories, according to the method of distribution and marketing adopted (see Appendix 2 to find more about the advantages and disadvantages of each method):

- Subscription (or farmer-driven): organised by the farmer, the degree of consumer involvement in the farm is generally low. The most common example is the producer-run vegetable box scheme. Every consumer generally buys in advance its part of harvest and picks it up during the season according to planned modalities.
- Shareholder (or consumer-driven): consumers work closely with the farmer. They may for example choose with the farmer the vegetables they want to

eat, the price of subscription, the detail for delivering the products (day, time, place etc.).

- Farmer co-operative: several farms co-operate to supply the consumers with a greater variety of produce. Thus, individual farms can specialise themselves in the most appropriate farming, such as field scale production for larger farms and specialist crops for smaller farms.

- Farmer-consumer co-operative: the difference with the previous model is that consumers have greater commitment, for example by co-owning land and other resources with the farmers or working together to produce and distribute food.

4.3.3. Benefits and limitations of the CSA initiatives:

"Promoting links between producers and consumers will not only give us healthier food and a cleaner environment, but will breathe new life into our communities. This is not just about agriculture – it is about the very fabric of our future." Helen Norberg-Hodge, Director of the International Society for Ecology and Culture (The Soil Association, 2001)

According to the Soil Association (2001) and Alliancepec, the benefits of CSA are:

- **Healthy food and protection of the environment**: produce are fresh, diversified (sometimes old and forgotten species), seasonal and mature, grown without chemical additives. Farmers have more time to focus on land stewardship and favour responsible and ecological methods and practices. Moreover, transport and packaging are considerably reduced and in some cases suppressed.

- **Local fair trade**: the system cannot ensure large profits but provides greater security against the fluctuations of the market rates. In general, members are encouraged to pay for produce in advance to help cover the pre-production costs. The price of food is fair for everybody, reflecting the real costs of production, ensuring a decent income for the farmer, and an affordable price for consumers.

- **A social, competitive and interdependent local economy**: consumers share the natural risks and benefits of the production with the farmer; value is given to the whole production (no grading or aesthetic norms); a fair income is guaranteed to the farmer and when production is bought in advance banks can be avoided. Moreover, as for organic farming, higher

employment, local consumption and the circulation of money in the community enhance the local economies.

- **Social links, education and transmission of culture**: thanks to the direct relationship between producer and customers, a dialogue and a trustful climate are created, which foster changes of the mindsets and behaviours. For example, by taking part in the preparation of the production planning, consumers understand that it is neither economically nor ecologically reasonable to eat tomatoes in January, and that the basket may be less well provided in case of bad climatic conditions (The Soil Association, 2001). Moreover, association grouping offer customers the opportunity to engage collectively around shared objectives like preserving local agriculture, reconnecting with biodiversity and landscapes, or returning to local distinctiveness and regional food production.

- **Valuation of the farming activity**: according to The Soil Association (2001), a survey reported that 79 per cent of farmers involved in CSA in the US expressed increased job satisfaction, and a considerable change in working practice. Indeed, greater value of production, fair prices, less constraints, greater return of the price and enhanced communication with customers give more value to the farming activity.

Therefore, the CSA initiatives seem to provide a very good financial return for the producer, and interesting social and environmental added values. However, their influence may be limited. 'A share in the Harvest' demonstrates indeed that people involved in CSA initiatives represent a cross section of society, including mainly the educated and environmentally aware families, and the elderly who want more tasty food. In addition, the durability of the system which is a necessary condition to its sustainability could be questioned: many CSA initiatives have already failed, and even though the system is independent from the market and the participation of customers helps to ensure adequacy with their needs and expectations, the Soil Association (2001) believes that the development of the CSA initiatives require inputs from governments and local authorities, for instance by increasing the role of local authorities in recognising and supporting local food production in all local strategies, or by developing a coordinated national network to improve the communication and support between CSA associations and CSA farmers and coordinate the promotion and marketing of the movement at national, regional and local levels.

Chapter 5   Towards a theoretical framework for assessing sustainable food supply chains

The previous literature review has been the opportunity to gain in-depth knowledge and understanding of the issues and stakes of the production and consumption of food. A generic framework summarising the criteria under which a particular model of food supply chain could be characterised as sustainable has thus been built and this chapter presents the approach that has been followed.

5.1   A whole-system approach

A whole-system approach is necessary to study and develop sustainable food systems. This concept of wholeness and holistic thinking is not new. Already Aristotle claimed that "the whole is more than the sum of its parts", which meant that the relationship between the parts cannot be derived from the laws which apply to the individual parts but only from the whole (Blatsou, 1996). The principle here of a systemic approach is to take into account the relationships and interconnections between the different elements constituting the system:

- **At the food production level**: Ikerd (1993) explains that in agriculture, sustainability is determined by the system, considered as a whole, because sustainable farming systems are farmer-, time- and site-specific. For example, a given set of practices or methods is not inherently more or less sustainable that any other, but is consistent with the "farmer's unique set of resources", including his or her knowledge base, technical know-how, and farming opportunities. In addition, farming is based on an interrelated set of markets, resources, inputs, products, people, and processes that make the problem even more complex.

- **At the supply chain level**: Green et al. (2005) explains that systemic thinking with regard to the production and consumption of food requires taking into account not only the production of food in agriculture and food processing factories, but also ideally the preparation, processing, distribution, marketing, cooking and eating of food, and the disposal of the wastes of such activities. Furthermore, Pretty (1997) insists on the importance of redesigning the whole concept of supply chain to achieve sustainable food systems. Indeed, it may seem hypocritical to talk about the development of more sustainable supply chains without redefining how these chains work, and thus reducing the number of stages.

In addition, the problem of the modern model of food production and consumption is to be too one-directional. Indeed, environmental and social aspects are usually left aside in favour of financial profit. A sustainable food system must therefore be based on a systemic approach taking into account every assets on which it relies for success. Only thus will the environmental, economic, and social challenges be addressed.

5.2   The Five capitals model

The Five Capitals model has been developed by Forum for the Future and presented by Jonathon Porritt in his book 'Capitalism as if the world matters' (2005), as a conceptual approach for understanding sustainable development. It is used to show the stocks and flows of resources that are necessary to sustain a system, and groups together:

- **Natural capital**: it basically represents the environment and the assets it provides. Two types of assets can be identified: the resources (renewable or not) and the services (the natural processes such as climate regulation, nutrient cycling and fixation, carbon sequestration etc.);
- **Social capital**: it comprises the whole set of social relationships and structures that can exist between people, develop their full potential and enhance their cohesiveness, such as families, communities, schools, businesses and governments, but all of them do not inevitably have positive effects;
- **Human capital**: consists of all the knowledge, emotions, skills, culture and other capacities that any human bring to relationships and that contribute to its well-being;
- **Physical capital**: draws together every human-made material assets such as machines, technologies, buildings, roads and other forms of infrastructure;
- **Financial capital**: is different from the others, as it is a concept representing the value of the four other capitals through any liquid assets, for example sales, shares, grants and subsidies etc.

The term 'capital' has been assigned to the five dimensions of the model to reflect the impact humans have on them and the benefits that they derived from them. Indeed, economists define the term 'capital' as a stock of anything that has the capacity to generate a flow of benefits which are valued by humans (Porritt, 2005).

As we have seen before, the five types of assets (natural, social, human, physical and financial capital) are involved in the systems of food production and consumption. Therefore, moving towards sustainable supply chains will require enhancing the positive effects on these capitals, while deleting the negative ones.

According to Jonathon Porritt (2005), the Five Capitals model can be used as an integrated management system or as an analytical tool for measuring success. Therefore, from this model could be built a framework as a basis for identifying where the gaps for more sustainable food supply chains are. However, alongside the previous analysis of literature on the subject, another issue often appeared as essential and affecting the five capitals. Indeed, policies and support mechanisms such as standards of certification influence considerably how the food supply chains now are designed and evolved. The sustainability of the food supply chains could therefore not be studied without taking this other dimension into consideration.

5.3   Presentation of the theoretical framework

5.3.1. Method

Table 5-2 is a summary of the developed framework under which a particular model of food production and consumption could be characterised as sustainable (the whole framework is presented in Appendix 3). This framework has been built from the adapted Five Capitals model and takes into consideration the whole supply chain, which can be simplified as constituted of the agricultural production, distribution-preparation-retail-marketing and consumption stages. The first step when building the framework has been the definition of collective attributes to characterise sustainable supply chains. Then, for each attribute, some examples of sub-attributes have been given as indicators to evaluate the attributes.

These generic attributes and sub-attributes are all derived from the previous literature review, and therefore have been defined to cover as much as possible the issues presented previously. However, the lists of attributes and sub-attributes are not exhaustive and some sub-attributes may sometimes overlap or interconnect, due to the complexity of the factors influencing the sustainability of a particular system. The point in doing a framework was not to have an exhaustive and perfect framework, but to have an overview and a checklist of the issues that need to be taken into account in the analysis of different models of production and consumption.

5.3.2. Particular application to the production and consumption of French beans

As we have seen previously, the approaches to sustainability in practice differ in emphasis, ideology, and impact, function of many different factors. With regard to food production, the implementation of sustainability is location- and product-specific (Prasad, 1997). Therefore, to ensure the validity of the framework and to give a focus to the research, the work has been restrained to a particular crop. Then, as ISCOM was developing a project of production of French beans in Kenya, it has been decided to focus on French beans.

French beans, or *Phaseolus vulgaris*, originate in South and Central America, and are grown and eaten worldwide. There are highly variable species, differing in the colour of the leaves, the colour and size of the pods, and the colour, size and form of the beans. French Beans require a good soil, free of weeds, but also a lot of water, which is mitigated by the fact that they grow very quickly and are very productive. They also need a warm soil in which to germinate and grow. Therefore, they can only be produced during summer in North countries, and are then imported all year round from all over the globe (see example of the French imports table 5-1). However, French beans start to dry out as soon as they are harvested, hence necessitating them to be transported quickly to the place where they are consumed.

Origin	Projections (ton)	Period of the year
France	500	From June 15th to October 15th
Burkina Faso	700	End of November to End of March
Marocco	1200	From March 15th to July 15th From September 15th to November 15th
Senegal	500	From November 15th to End of April
Kenya	1200	All year
Others (Bangladesh, Egypt, Spain, Holland, Madagascar, etc.)	500	-
Total	~ 4600	

Table 5-1: Projections of French beans imports by Séléction-Rungis, import leader in France (Selection: 30% market share)

Even though the consumption of French beans has slowed down in Europe over the last decades, probably due to changes in consumption habits, the worldwide production of beans is still increasing, especially in African countries such as Kenya. According to the FAO (Food and Agriculture Organisation), the worldwide production of French beans was estimated at 25,7 millions of tons in 2002, which is probably underestimated as beans are highly grown locally in developing countries.

Figure 5-1: Kenyan Green Beans exported to the 4 main destinations in EU (Sahota, 2006)
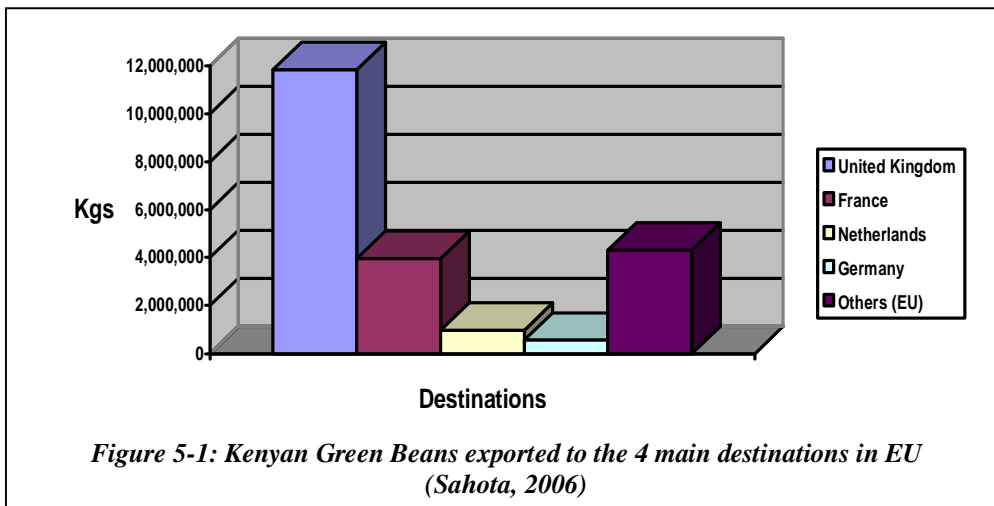
Kenya's most significant export destination for green beans is the European Union, and in particular UK, France, Germany and The Netherlands (see Fig 5-1), where there is an important demand for both fresh and processed form. Kenya is leader in green beans export to the EU for over a decade after Morocco and Egypt, mainly due to its reputation of very good quality (see Fig 5-2). It has also maintained a stable, liberal macroeconomic policy environment which favours foreign investment and international trade. Therefore, the French beans case study seems to be interesting due to their global production and consumption which raises many environmental and social implications.

Figure 5-2: main suppliers of green beans to EU (Sahota, 2006)
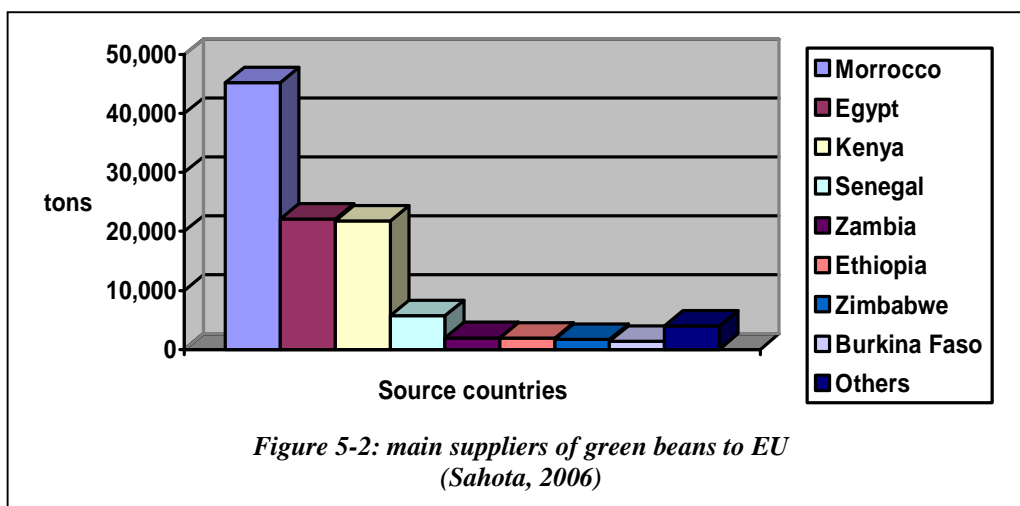
5.3.3. Definition of the attributes

To be sustainable, food supply chains must be environmentally-friendly, socio-politically aligned, human-enhancing, physically adequate and economically viable:

- **Environmental friendliness** considers the relative environmental impact of the different stages of the supply chain and includes the following attributes: land usage, biodiversity, greenhouse gas emissions, resource conservation, landscape quality, soil quality, waste and water management.

- **Social alignment** measures the attitude of the different actors of the supply chain to the needs of both employees and local communities. It accounts for the satisfaction of the different stakeholders and the effectiveness of the structures set up. The attributes include: community well-being, trust and information about the other stages of the supply chain, employment and interaction opportunities, workers' satisfaction and health and safety risks.

- **Enhancement of human knowledge** assesses the opportunities for employees along the supply chain for personal development, and the demonstration of respect for individuals' differences and specificities, with attributes such as: knowledge transfer and innovation, management of problems, culture and independence and self-reliance.

- **Physical adequacy** refers to the suitability of the infrastructures for the development of the activities along the supply chain and includes the following attributes: buildings, energy and transportation systems, waste treatment and disposal, technologies, communication and management of hazardous products. The sub-attributes examine the suitability of their management for the sustainability of these activities.

- **Economic viability** refers to the economic validity of the different elements of the supply chain by evaluating the financial return and the quality of the product in comparison to the investment, operating and other costs. It is also a way of measuring whether all the costs are internalised and if the price is fair. Examples of economic attributes are: investment funding, commercial viability, subsidies / grants, operating costs, value and quality of the product and level of dependence.

- **Policies and support mechanisms acceptability** is aimed at evaluating how much policies and support mechanisms help or hinder the sustainability of the supply chain. It is represented by the following attributes: integrated

approach, flexibility, comprehensiveness of the accreditation process, adequacy with other policy requirements and returned benefits.

5.4 Validation of the framework by comparison with the GRI guidelines

It is very important to give validity to this framework by comparing it to a reference. Global Reporting Initiative is a large multi-stakeholder network of experts around the globe who participate in the creation of the Sustainability Reporting Framework, which is a set of guidelines to report on an organisation's or product's sustainability performance. These guidelines are used internationally as an accepted reporting framework.

On the same model as the framework presented previously, the GRI guidelines provide a holistic framework to address the economic, social and environmental performance and consist of a list of indicators relating to these three dimensions (see Appendix 4). They are flexible and can be used in different sectors and geographical contexts as well as by organisations of all sizes and types (Global Reporting Initiative). However, they are more appropriate for large corporations, as emphasis is placed on social aspects which aspects such as labour practices and decent work, human rights, society and product responsibility.

In the GRI framework, attributes are called aspects and indicators and are defined as "a measure of performance, either qualitative or quantitative" (Global Reporting Initiative, 2002), but most of them are similar to those presented in the researcher's framework. The structure is also the same even though at first sight, the framework presented in this thesis seems to have a more integrated approach with six dimensions instead of three. Yet, it then appears when looking at the attributes of the GRI framework that human and social aspects are in the same category and policy and support mechanisms aspects are taken into account where appropriate in the three main categories. Therefore, even if the global picture looks different, the direction of the framework is the same.

Dimensions \ Stages	Environmental friendliness	Social alignment	Enhancement of human capital	Physical adequacy	Economic viability	Policy and support mechanisms acceptability
Production	• Land usage • Biodiversity • Greenhouse gas emissions • Resource conservation • Flood protection • Landscape quality • Soil quality • Water quality	• Development and deprivation • Trust and information about the other stages of the supply chain • Interaction • Employment opportunities • Farmers satisfaction • History • Health & Safety risks	• Farmers knowledge and skills • Knowledge transfer and innovation • Employment • Management of problems • Independence and self-reliance • Culture	• Buildings • Energy systems • Irrigation systems • Waste treatment and disposal • Agricultural technologies • Management of chemicals	• Investment funding • Viability • Commercial viability • Subsidies / grants • Operating costs • Value of product • Quality of product • Availability of raw materials • Level of dependence upon technology • Crop vulnerability	• Integrated approach • Direction of the policy • Adequacy of the criteria • Flexibility • Support • Comprehensive accreditation process • Adequacy with other policy requirements • Returned benefits
Distribution Preparation Retail Marketing	• Land usage • Biodiversity • Greenhouse gas emissions • Resource conservation • Flood protection • Landscape quality • Waste • Water	• Development and deprivation • Respect for and information about the other stages of the supply chain • Interaction • Employment opportunities • Workers satisfaction • Health and Safety risks	• Workers knowledge and skills • Knowledge transfer and innovation • Employment • Management of problems	• Transportation systems • Management of chemicals • Storage of chemicals • Buildings • Energy systems • Communication • Water systems • Waste treatment and disposal	• Investment funding • Viability • Commercial viability • Subsidies / grants • Operating costs • Value of product • Quality of product • Compliance costs • Level of dependence upon raw materials	• Integrated approach • Direction of the policy • Adequate criteria • Flexibility • Support • Comprehensive accreditation process • Adequacy with other policy requirements • Returned benefits
Consumption	• Land usage • Biodiversity • Greenhouse gas emissions • Resource conservation • Waste	• Consumers satisfaction • Development and deprivation • Trust and information about the production • Interaction • H&S risks	• Consumers skills and knowledge • Knowledge transfer and innovation • Independence and self-reliance • Culture	• Energy systems • Waste treatment and disposal	• Food security • Fair price • Value and quality of product • 'Operating' costs	• Influence on customers' choice • Returned benefits for farmers

Table 5-2: Summary version of the generic framework

Chapter 6   Methodology

The aim of the thesis is to identify the drivers of, and barriers to the development of more sustainable food supply chains, based on the particular example of French beans. To do that, different approaches to their production and consumption have been analysed, and their specificities at the different stages of the supply chain taken into consideration. The concept of the research was to use the framework presented previously as a basis for the collection and analysis of data. Therefore, the methodology has been built on the same structure: study of different approaches to the agricultural production of French beans, analysis of the efforts made by retailers to increase their sustainability performance, and analysis of different approaches to the consumption of French beans. Then, it appeared interesting to use the fact that the researcher is French to add a new dimension to the study by developing the research as much as possible in the UK as well as in France, as the norms, attitudes and behaviours at each stage of the supply chain can be different due to different cultures, locations, legislations etc.

6.1   Methods available

To carry out the research, various social enquiry techniques were available. These included the review of secondary sources (literature, website), the administration of questionnaires by email or telephone, the conduction of face-to-face interviews or the use of multiple methods. Reviewing secondary sources can be very useful in qualitative research, by saving time and helping to gain background knowledge before preparing any engagement. These secondary sources may involve former research, reports, statistics, articles, or even information about specific organisations and are most of the time easily accessible through internet.

There is an extensive literature on descriptive and qualitative methods and techniques (Lemon et al. (2005), Mikkelsen (1995)) and the point here is not to describe all of them. Nevertheless, Lemon et al. (2005) explain that basic surveying techniques based on interviews and questionnaires are interesting because they provide an insight into and feel for the context within which individuals, groups and organizations make their decisions, the criteria upon which they make them and the thresholds at which they make them. All of them are greatly influenced by the level of structure that is adopted. For example, when the aim of the research is to collect information from a specialist in a particular subject, a pre-determined structure

would be limiting. On the contrary, when there is a need to establish comparative data, a more structured approach is required (see tables 6-1 and 6-2).

Advantages	Disadvantages
Respondents can express themselves in their own language and according to their own classifications.	Time may be lost through the pursuit of irrelevant lines of enquiry and response.
The interviewer can 'clarify' responses when necessary.	Relevant issues may not arise in the course of the interview.
Important but unforeseen lines of questioning and response may emerge.	Analysis is complicated due to the variation of material covered or lack of commonality between responses.
The duration of interviews can be clearly determined.	

Table 6-1: Advantages and disadvantages of less structured approach (adapted from Lemon et al., 2005)

Advantages	Disadvantages
Consistent wording.	Procedures and questions are not adaptable if they turn out to be inappropriate.
Directly comparable results.	Loss of information which does not conform to predetermined format.
Third party can administer the interview.	Respondents may force responses into predetermined categories.
Data analysis is clear, often quantitative, and designed in advance.	If undertaken without exploratory phase the agenda will be that of the investigator rather than the respondent.
Can ensure anonymity and as such may encourage more personal responses.	Clarification and elaboration is difficult.
Are free of interviewer bias.	Reading and comprehension difficulties cannot be catered for.

Table 6-2: Advantages and disadvantages of structured format (adapted from Lemon et al., 2005)

Due to the structure of the research, the study had to pursue a multi-stakeholder and multi-method strategy involving documentation analysis and engagement with stakeholders. In addition, it was important to triangulate the research as much as possible by using different methods and different sources of information to amend the validity of the research. The choice of approach was influenced by the accessibility of respondents, the scope of information desired, and the time and cost implications of the methods and techniques. For example, email is a readily available and cheap method which also avoids language issues when the researcher is not an English native speaker, but has a very low rate of responses (usually less than 10%). It also requires a structured approach, which reduces the number of

opportunities to use it. The approach was split into three phases of research activity matching the three main stages of the supply chain. These are summarised in figure 6-1.

6.2 First phase of the research

6.2.1. Outline of the method:

The first phase of the research consisted of gaining knowledge and information about different models of production of French beans. The analysis of three case studies seemed the best compromise to ensure an interesting collection of data without being too time-consuming. Therefore, according to the decision to develop as much as possible the research in France as well as in the UK, one case study was chosen in France, another one in the UK, the last one being the Umoja project managed by ISCOM in Kenya.

Engaging face-to-face with the producers through semi-structured interviews was perceived as the best approach for this phase of the research. Indeed, this enables a more conversational attitude, while being controlled and structured, to establish trustful relationship with the respondent and gain in-depth information. Questions are asked according to a flexible checklist based on the framework, many of them are formulated during the interviews and some others dropped if irrelevant. Thus, qualitative data and personal thoughts and impressions of the producers can be gathered. However, this approach was obviously not possible in the Umoja case. Therefore, secondary documentation was analysed and followed up by a short questionnaire sent by email and based on the same checklist to gain additional information.

6.2.2. Structure of the research:

Contrary to most people who are on leave for holidays during summer time, farmers have to cope with their busiest period of the year. Therefore, even though it may be believed easier to contact farmers than other types of people, it was finally very difficult to get an appointment with them. For instance, the first idea was to broaden the sustainability argument of the study in a practical way by targeting associations rehabilitating unemployed people in agriculture. However, these associations were really busy and the idea had to be forgotten.

Finally, the case studies of a local grower of organic and seasonal vegetables in France, and of a former UK conventional farmer who now works at developing local and cooperative solutions were chosen. For these two cases, the semi-structured interview was conducted as a discussion, to allow the producer to explain his ideas in his own words and to avoid interviewer bias as much as possible. The points of the checklist were slightly different regarding the type of producer, but were all gathered under the following six headings (see Appendix 5 and 6 for more detail):

- Definition of the production model and the reasons and motivation behind it;
- Methods and technologies employed, but also possible water and waste management, irrigation methods, type of seeds, energy systems and chemicals used;
- Organisation of the distribution and marketing stages and the reasoning behind it;
- Management of the farm and its employees, that is the level of formation , training opportunities, possible internal policies, interaction with associations of farmers etc.;
- Links with and perceived impacts on local community;
- Type of consumers and relationships with them;
- Financial aspects, and notably the commercial viability and the subsidies received;
- Importance, flexibility and benefits of the policy and support mechanisms.

The three case studies were analysed by using the headings of the framework to identify the different sustainability challenges of each approach and a SWOT analysis was then done for each case study to assess the barriers, drivers and gaps for more sustainable food supply chains.

6.3 Second phase of the research

6.3.1. Outline of the method

The next stage along the supply chain gathers the distribution, packing, retail and marketing of the products. It has been decided to try to engage with retailers who control all these stages and were thus perceived as able to answer questions about these aspects. The objectives of this engagement were to understand the role of retailers in these food supply chains, to evaluate the reasoning adopted when purchasing and marketing vegetables in general, and French beans in particular, and to analyse retailers' attitude regarding sustainability issues. Indeed, most of

the negative impacts of the supply chain come from transporting, preparing and packaging the food. Therefore, it was interesting to identify the efforts retailers do or could do towards more sustainable supply chains.

The plan was to start the research on retailers by reviewing their sustainability strategy, which they all have developed in the last years, often as part of their marketing strategy. However, this type of information is not always reliable, it was therefore important to triangulate the information by using other methods. Three types of engagement have thus been planned: face-to-face interviews with people either in CSR, purchase, or marketing services of each retail brand in France and in the UK, and by phone with people responsible for fruits and vegetables in the shops, to gain information about the products sold and their perception of the sustainability policy of the brand. Indeed, retailers feel that purchase, CSR and marketing are three separate functions. It was thus interesting to explore how this differentiation might affect their view on the retail process as a whole and to encourage them to talk about how their retail function relates to sustainability and how they define the concept in its light. Finally, it was also planned to engage face-to-face with an intermediary responsible for importing, washing, packing or transporting vegetables.

6.3.2. Structure of the research:

However, this second phase of the study quickly appeared more complicated to put in place than the first one, mainly due to problems of access. Indeed, the strategy adopted was to contact each brand in the UK and in France by email or phone to obtain a name, either in CSR, purchase, or marketing services, and to ask for a face-to-face interview, or at least to send a questionnaire by email or post. However, the structure of the big retail groups and the time of the research made it difficult the access to the right person. Therefore, no face-to-face discussion has been possible, and nine questionnaires have been sent in France (to the following brands: Carrefour, Auchan, Cora, Leclerc, Mousquetaires, Casino, Pomona, Système U, Monoprix) and three in the UK (to the following brands: Waitrose, Sainsbury's, Tesco). Only one questionnaire has been returned by the group Casino. However, the researcher also seized the opportunity of a conference about CSR at the Cranfield School of Management to meet Ian Bowles, Head of CSR at ASDA and E-J Walker, Community Programme Manager at Marks and Spencer and to question them directly about their CSR strategies.

The questionnaire (see Appendix 7 and 8) was built on a semi-structured approach, with key headings and suggestions for answering, to avoid interviewer bias and identify the real application of the strategies developed by the retailers. Examples of questions include:

- Do you take environmental and social aspects into consideration in the choice of vegetables to retail?
- Do you sometimes buy vegetables directly from producers?
- What type of French beans do you retail?
- Which criteria influence the choice of French beans you retail?
- Could you describe the process and the logistics through which the French beans you retail have to pass before being sold?
- How do you apply the sustainability principles to the marketing and sale of vegetables?

Then, eight contacts were established with people in charge of the purchase of fruits and vegetables in 7 different brands (Carrefour, Leclerc, Monoprix, Intermarché, Netto, Cora, Hyper U). However, engaging with these people was very difficult as they work from 4am to 1pm, and do not have a lot of time to answer questions. Thus, the strategy has been to reduce considerably the questionnaire and to ask directly the following questions:

- How is the purchasing process organised?
- Do you sometimes buy vegetables directly to small producers? Why?
- Do you offer organic and fair-trade vegetables to your customers? Which ones? Why? Which percentage?
- What do you think are the differences with the other products?
- What type of French beans do you sell? Which origin? What are the differences?
- What are the criteria to purchase?
- Do you have any particular instruction from the direction to highlight some products (organic, fair-trade)?

However, it must be recognised that personal opinions from the respondents might sometimes have been biased as they were not always very keen to answer and to spend time on the phone, hence trouble and desire to obtain the information quickly from the interviewer. The responses were then coded and entered into an excel spreadsheet from where they were analysed.

Finally, a contact has been made with Mark Spurdens, technical manager for RB Organics, a UK specialist in washing and packing organic vegetables for UK food retailers and food manufacturers. Due to tight deadlines for the researcher as well as for the respondent, a face-to-face interview was not possible, and information has thus been collected through an emailed semi-structured questionnaire built as follows (see Appendix 9):

- Do you have to comply with special requirements or policies from your clients?
- How do you choose your suppliers? Do you impose any quality, ethical or other requirement to the farmers? Do you encourage them to develop new methods and techniques, or environmental best practices?
- Why are doing only organic vegetables at RB Organic? Is it more constraining than conventional vegetables?
- What do you think is the main reason why retailers sell organic produce?
- How do you manage your environmental and social impacts?
- What type of relationship / partnership do you have with your different stakeholders?

The questionnaire has been simply analysed and linked with the analysis of the retailers.

6.4   Third phase of the research

6.4.1. Outline of the method

The third phase of the research consisted in engaging with consumers to assess their perception and knowledge of the different models of production of French beans, to identify possible consumption trends and to evaluate the impact of labels and other support mechanisms on their consumption patterns. Therefore, it has been decided to prepare a structured questionnaire with open-ended questions requiring clarifications or opinions by a majority. The objective was to gain a maximum of answers from various respondents, not to obtain a statistical analysis of the results but rather to be able to establish trends and to understand how it may be possible to encourage more sustainable behaviours.

6.4.2. Structure of the research:

Because of time restrictions, the study has only been realised in France. The first experiences on local markets being really disappointing, the researcher finally

decided to target people and to apply the principle of networking, by asking respondents for addition of contacts. Therefore, two types of engagement with the same questionnaire have been used (see Appendix 10): face-to-face as much as possible and email. Examples of questions asked include:

- Do you usually cook a lot? Are traditional meals important for you?
- Where do you usually buy vegetables? Are you satisfied with the variety of vegetables offered? Do you pay attention to the seasonality of the products you buy?
- Are you concerned by the way food in general is produced, prepared and packaged?
- Is it important for you to help the farmers in your country by buying their products?
- Is the respect for the environment a factor influencing the choice of products you buy?
- Do you trust standards and certification labels when you buy food?
- Have you already bought fair-trade products? If no, why? Did you find a difference with ordinary products?
- These products are often more expensive. Is it an issue for you?
- Do you think these labels have an influence on your global consumption pattern?

Respondents were allowed and encouraged to add general comments. Nineteen responses have been received and have then been coded and entered into a SPSS spreadsheet from where they were analysed.
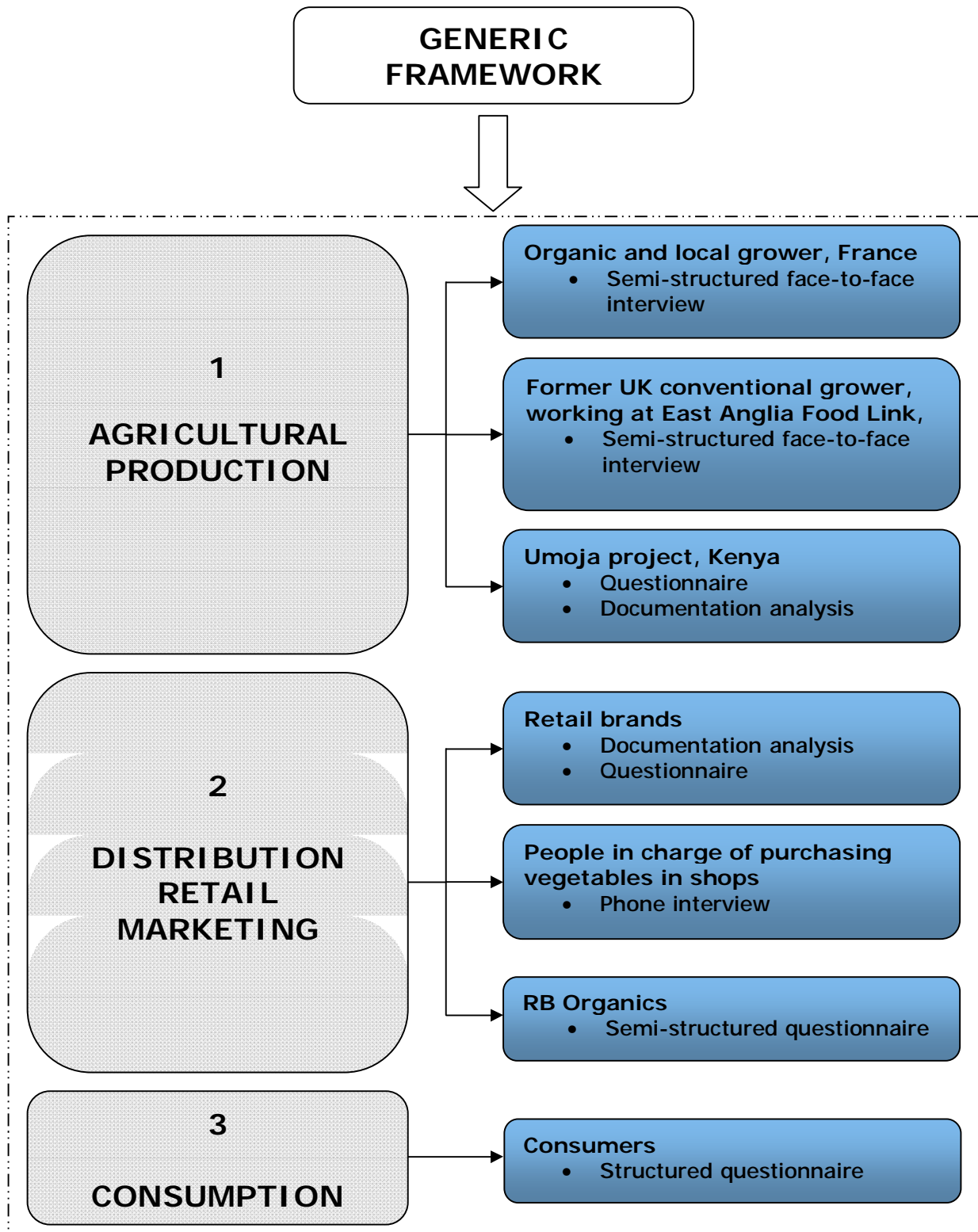
Figure 6-1: Structure of the research

The next section presents the results and analysis of the work carried out during these three phases of research.

Chapter 7   Results and analysis of the work carried out

7.1   First phase of the research: study of three different approaches to the sustainable production of French beans

7.1.1. The Umoja Project in Kenya: sustainable benefits for farmers and investors

The concept

The Umoja Project is aimed at establishing a viable business venture on the basis of sustainable agricultural supply chain to help four groups of small-scale farmers to move from a dependency syndrome to one of self-reliance and pride. The concept is that farmers remain responsible for how they run their farm, but are supported in different ways to ensure a sustainable flow of income, high-quality products, and the integration of the social and ecological issues: an association called the Umoja Farmers Association, registered under Kenyan laws, is the central body through which all matters concerning the farmers are dealt with, such as training, administration, control of procedures and adherence to quality management criteria; a commercial firm, the Umoja Food Trading Ltd (UFT), run by competent Kenyan professionals, undertakes the business aspects of the project, such as binding contracts, guarantying stable income throughout the year and being a forum for social, economic and environmental development.

The project is stakeholder-driven and the main partners involved in the development of the project are:

- 239 farmers who bring in their own land and labour;
- ISCOM which plays a central role in the design, implementation and follow-up of this project;
- The Kenyan Ministry of Agriculture which provides training in EurepGap (protocols that farmers have to implement in order to export into the EU);
- Woni Investments, an exporter of high-quality horticulture produce to the EU, which ensures to the farmers market access and guaranteed prices;
- A local NGO, Honey Dew, which assists farmers on a number of capacity building activities and in sustaining good governance practices of the project;
- Local banks which provide institutional structures for payment disbursements, savings and other aspects of financial management.

The land is fertile and suitable to the cultivation of a variety of horticultural and other crops. Therefore, the project is to use half the land for growing and exporting both fine and extra fine French beans for export to the EU, and the other half for growing a variety of horticultural products for own consumption and local markets. Thus, farmers are prevented from economic risks and dependence on a single product.

Analysis of the sustainability challenges

Environmental challenges

The main environmental issue of the Umoja project comes from the transport of beans from Kenya to Europe. This particular aspect of the project may reappraise its sustainability, and the choice of a particular mode of conditioning the beans may change the whole picture. Indeed, fresh beans need to be quickly transported by plane, hence a massive consumption of fossil fuel and the emission of greenhouse gases, while dry beans can be shipped. Moreover, the packaging issue may also be questioned, as the trend is currently to pre-pack the produce in Kenya for the European supermarkets so that they go directly to the shelves. This might appear as insignificant, but the packaging needs to be transported previously by plane from Europe to Kenya, adding to the environmental costs. Regarding the agricultural production, the affordability and quality of water is another important issue for the Umoja project. Indeed, there is ample water from a number of different sources, such as rivers, natural and artificial dams. However, investment in water quality and increases in capacity in irrigation are required to improve food security and family incomes. Moreover, electricity is not available, and pumps, when used, rely on diesel or petrol. No special efforts have been made to use renewable energies, such as solar energy readily available in Kenya.

Social and Human challenges

The main challenge here is to ensure a stable income for farmers. Farmers currently live in abject poverty. There are no employment contracts and family members provide the necessary input when required. However, according to ISCOM, today in Kenya, farmers want to overcome their traditional isolation and want to know about useful technologies. They want them to be available and affordable and more importantly want to be taught how to use them. They are also ready to improve the quality, reliability and professionalism of the production. To be able to supply the high-quality products required by European consumers, training

regarding sustainable modes of agricultures is required. Basic training has previously been provided by the Ministry of Agriculture but follow-up and implementation is weak. ISCOM also considers it necessary to take into account issues such as transparency in decision making, complete and unrestricted access to information and knowledge, gender issues, ethical standards and principles of good governance. That is why farmers are involved in decision making that directly or indirectly affect their livelihoods.

Infrastructural challenges

Most of the methods and techniques used are based on manual labour. There is not much in terms of technology apart from portable irrigation pumps and chemical spray equipments, which are both a major challenge. However, with the current trend to pre-pack the produce for the European supermarkets, the project will have to implement a cohesive, fool proof system of production and collection. This will be a necessary condition to present a competitive and efficient production unit and thus attract export contracts.

Financial challenges

From the farmers' perspective, investment and operating costs are very high, especially with regard to technologies. In addition, supply chains consist of a number of middlemen between producers and consumers who squeeze the farmers, by controlling the chain and reducing the amount of money returned to farmers. They do not have collateral to safeguard loans either from the government agricultural finance corporation or from commercial banks. According to ISCOM, NGOs have in recent years provided small loans to groups whose collateral is peer pressure, but these do not have sufficient capital to expand and probably cannot administer such loans profitably on a commercial basis. Moreover, no subsidies from government are available. ISCOM's stakeholder approach addresses this very challenge, by getting funding from the SNS Asset Management Bank, the Netherlands. The project makes for a reliable investment that can be paid back over a reasonable period of time of eight years, while for the farmers the project will provide a notable income increase that will substantially reduce their poverty.

Policy and support mechanisms challenges

Certification of the farmers for EurepGap is a top priority of the project. Indeed, European retailers have created and implemented these standards to ensure

integrity, transparency and harmonisation of the global agricultural standards. Therefore, it is easier for farmers following the EurepGap protocol to sell their produce to European retailers. The standards are grouped in four categories: respecting worker health, safety and welfare, environmental and animal welfare issues, and consist for example in keeping records of the quantities and types of chemicals used. Thus, ISCOM believes that EurepGap is the solution to address most of the previous challenges.

Conclusion

Strengths	Weaknesses
• High-quality production • Independence from industrial inputs (chemicals and technologies) • Independence from importation • Multi-stakeholder approach • Cooperative approach • Ethical exporter • Security of production and reduction of poverty • Plentiful and efficient workers • Motivated individuals • Reliable investment • EurepGap certification	• Transport of beans by plane to Europe • Need for importing packaging from Europe • Affordability and quality of water • Reliance on fossil fuel for pumps • Lack of support from Kenyan government
Opportunities	**Threats**
• Favouring the production of fresh beans for local markets and dry beans for exportation to reduce the environmental impact of transport • Developing competitive and compost-able packaging in Kenya to avoid importing packaging from Europe and to reduce the environmental impacts of packaging • Developing the use of renewable energies, in particular solar energy • Developing micro-irrigation systems • Training farmers to reduce health and safety risks, increase the quality and professionalism of the production and increase the opportunities for personal development for farmers.	• Competition from other developing countries which can produce cheaper beans • Lack of adequate infrastructure • Cost of EurepGap certification • Cost of technologies

Table 7-1: SWOT Analysis of the Umoja project

7.1.2. Emmanuel Crucifix, local grower of organic and seasonal vegetables in France: sustainable benefits for farmers and consumers

The concept

"Joining forces, supporting mutually, cooperating for employment and interdependent economy while preserving the environment and ecological habitats are the main objectives of the structure." Emmanuel Crucifix

The second case study is an organic production of seasonal vegetables, sold locally through a Community Supported Agriculture (CSA) scheme. The farm is 100 years old, located in the North of France in Cauffry (Oise) and has always been managed 'organically'. It was certified in January 2006 by *Ecocert*, the main certification body in France. For E. Crucifix, organic agriculture was the only possible solution: "Now one child out of four from agricultural families is sterile, I believe that organic agriculture is the only way to save the planet and our children". He produces more than forty different species of seasonal vegetables and herbs, and also offers some transformed products such as soups and canned foods. He then sells them through a CSA scheme. In France these schemes are called 'Association pour le Maintien de l'Agriculture Paysanne' (AMAP, meaning Association for preserving local agriculture) and are driven by customers who finance in advance the production. In return, the grower sells his produce at a lower price than in supermarkets and delivers fresh and high-quality produce.

The delivery is done once per week all year round, and there are 5 to 7 different types of vegetables in each box. The farmer does the delivery and answers gladly to every question consumers may have about the production of vegetables, the calendar of production etc. He also sells on markets, and sometimes in organic supermarkets called 'Biocoop'. E. Crucifix is also a trainer of young farmers, who generally were unemployed for a long time, or willing to change their way of life. The principle is to

Example of box provided during winter
I kg of French endives
1 kg of potatoes
1 salad
250 g of corn salad
1 Kg of carrots
1 kg of leeks
1 celery
500 g of turnips
500 g of beetroots

train them for two years in his farm, then let them manage on their own a second farm for one year, and finally help them to develop their own farm. Moreover, the producer intends to make this second farm completely self-sufficient, by installing equipments using renewable energies and reintegrating animals-pulled machines he inherited from his grandparents.

Analysis of the sustainability challenges

Environmental challenges

E. Crucifix follows the methods and techniques of organic agriculture, which by definition are environmentally-friendly. He recognises the importance of biodiversity in pest management, and for example uses the natural advantage of his location near a river by letting frogs coming and preserving his strawberry folds and leaves wildflowers grow in the middle of the crops to ensure pollination. However, he also recognises the necessity of making trade-offs to let biodiversity play its role. For instance, he enjoys the presence of a pair of foxes, a pair of buzzards and a pair of weasels which protect its crops from wild rats, insects, and other similar animals, but in return accepts to lose some eggs and other products. Moreover, the producer practices mixed farming, by raising some poultries (goose, hen, cock and guinea fowl) and goats, and uses them for example to clean naturally the fields after harvest. He also tries to be as self-sufficient as possible, and thus cultivates his seeds in greenhouses. To irrigate, he uses ground water he removes from a well instead of surface waters. Indeed, according to him, ground waters contain only 50% pollution against 75 for surface waters. However, this choice may contribute to the depletion of a natural resource in crisis. Indeed, even in this area of the North of France, water availability is limited, and irrigation is therefore forbidden during summer from 10am to 5pm. To avoid weeding, the producer usually uses plastic bands. However, he acknowledges the negative environmental impact of discharging plastic. Therefore, at the time of the interview, he was considering choosing instead a new biodegradable mulching, even though its price is a lot more expensive: 1500€ for 5 kilometres instead of 400€. Finally, the producer sells in four different places, but all are located less than 100 kilometres away from his farm to ensure minimum transport and freshness of the products which are delivered the day of harvest. The model of production enables thus the producer to provide healthy food to its consumers, and to protect the natural resources he is relying on.

Social challenges

The social potential of the CSA concept has been largely described in the literature review, and can be summarised as favouring social links between cities and countryside, increasing transparency and proximity between producer and consumers, and revitalising rural communities. But E. Crucifix also emphasised how much the concept values both farmers and consumers. Indeed, through their

associative engagement, the consumers take part in the life of the association and the farmers assure a pedagogical role and communicate about their job. E. Crucifix highlighted for example how much it was important for him to have the opportunity to meet his consumers, to discuss with them, to prove that he effectively grew the produce he is selling, to communicate about the methods and techniques he employs, and to raise awareness of consumers about issues he is concerned about. This represents for him a unique opportunity to value his job and himself. Moreover, in this particular case, there are additional social benefits through the rehabilitation of people. The grower believes that "organic production has more potential for rehabilitating people than other development activities thanks to its deep respect for nature, human and the environment".

Human challenges
Like the previous point, most of the impacts on human capital have been presented in the literature review. The system opens a dialogue based on a trustful climate between the farmer and the consumer, which enables mindsets and behaviours to change. Even though the choice of vegetables is limited in box schemes, it may have positive impacts on consumers, who may rediscover vegetables they are not used to eating and learn how to cook them. Knowledge and culture are transmitted from the producer to the consumers, and all actors rediscover their link to nature. Indeed, the interviewee explained that he previously worked in advertising, and suddenly decided to stop this activity for ethical considerations. Like the employees he is training and rehabilitating, the link to nature and the environment was crucial. Moreover, the training principle presented in this case is a unique opportunity to develop different skills and to become responsible, making the rehabilitation more than successful.

Physical challenges
The producer is working in a hundred years old farm, located near a river and a forest, at the end of a small village. Therefore, the buildings and fields used are the same than a century ago, and are part of the history of the village. Due to the avoidance of chemicals, health and safety risks are considerably reduced on site, and the technology is also minimised. Indeed, the producer owns four tractors, but is concerned by the dependence on fossil-fuel and the greenhouse gas emissions they imply. He thus tries to find a compromise between hardness of the work and environmental impact of the technologies. Indeed, even if his commitment for more sustainable agriculture is huge, he admits that doing a task in 45 minutes instead

of a day is a huge progress and that it would be stupid to deny it. Moreover, gaining such time is an opportunity to care about other aspects of the production, such as best practices, or biodiversity. Therefore, he tries as much as possible to mix technological innovations with respect for the environment and knowledge from the past. For example, to irrigate, he chose the principle of electrical micro-irrigation which consists of irrigating more often but less, with technologies such as fogging. For instance, in greenhouses it helps to chill the air before water reaches the plant, reducing evaporation. In more detail, micro-irrigation uses between 2 and 15 mm/h, while normal irrigation uses between 12 and 100 mm/h (1 mm meaning 10L water for 1 m² soil). However, the producer is currently questioning these technologies, is hoping for more sustainable technologies and meanwhile is looking into the past.

Financial challenges

The concept studied here presents many benefits in terms of economic viability. Indeed, even though the transition from conventional to organic agriculture costs a lot of money, and that in general every input bought for organic agriculture is more expensive than for conventional one, both organic and CSA concepts take part in the economic viability of the farm. Firstly, organic agriculture requires a lot less inputs than conventional agriculture and innovations and the quality and value of the produce are a lot better, allowing farmers to ask for a small premium. Moreover, the payment in advance of the harvest enables farmers to start with less financial constraints, to avoid banks and the subscription rate reflects the real costs of production, and not the market rates. Therefore, the producer explains that even though the concept is not "a way to make a lot of money", the trade is fair and ensures economic viability of the concept. In the particular case of the grower interviewed, a box was sold either 10 or 15 euros, depending on its size. The price is calculated as an average between low and high season, to ensure the farmer a stable income during all year. The grower currently sells 138 boxes per week in four different places, which gives him an income of around 2000 € per week. But he also sells on markets and sometimes in organic supermarkets called 'Biocoop'. He recognises that this last solution is interesting, as the retailer is in accordance with his principles, and it is a good way to sell off overproduction. However, even in this type of supermarket, it is more constraining because he is obliged to offer graded produce, while through box schemes the whole production is valued, allowing the farmer to report the costs on the totality of the production.

Policy and support mechanism challenges

Organic certification is aimed at supporting the farmer by highlighting its commitment and efforts, and rewarding it with more customers. To be certified organic, producers must comply with a strict set of regulations. For instance, seeds for organic agriculture must come from organic agriculture, but are a lot more expensive: 2500 conventional seeds cost 15€, against 150€ for organic seeds. Therefore, organic certification represents many compromises and financial constraints. Surprisingly, the grower claimed that the certification did not even bring any benefits to him. He always produced organically without being certified and "paying for the certification just gave him a proof that he is effectively producing organically". Moreover, the government seems to not yet support local and organic growers but E. Crucifix was not complaining about it as he was enough supported by his consumers.

Conclusion

Strengths	Weaknesses
• Organic production • High-quality production • Independence from industrial inputs (chemicals and technologies) • Minimisation of transport and packaging • Cooperative approach • Rehabilitation of people • Transmission of knowledge and culture • Stable income and independence from the banks • Reduction of the operating costs • Higher return of money to the farmer • Independence from the market	• Depletion of groundwater • Fossil fuel dependence
Opportunities	**Threats**
• Increased consumer demand • Alternative supermarkets to complement CSA schemes and make the concept even more economically viable • Micro-irrigation • Increasing the sustainable benefits by developing self-sufficient farms with renewable energies, water recovery systems, and reintegrating animals-pulled machines.	• Availability of water • Organic certification • Lack of support from government • European legislation

Table 7-2: SWOT analysis of the local and organic production

7.1.3. A former conventional farmer of the UK: local and cooperative solutions for a sustainable UK agriculture

The concept

William Hudson farmed for thirty years in Ardleigh, Cambridgeshire and grew all sorts of crops, willing to discover new types of agricultural technologies, and to broaden the scope of crops that can be grown in the UK. He notably achieved success in producing strawberries during six months of the year, with a farm worth half a million pounds. However, he just decided to stop farming, to devote his time to the development of more sustainable supply chains in the UK and particularly in East Anglia. The reason is that he was not able to make money anymore with the current agricultural system, could not downsize his production as he owed too much money to the bank, and thus was forced to sell his farm to pay back the banks. Now he works with East Anglia Food Link (EAFL), a not-for-profit cooperative, to develop new markets and solutions toward a more sustainable food system across the East of England. For W. Hudson, the solution in the UK is to develop a local and cooperative market, based on three principles: farmers able to market and process the sustainable food they grow, consumers shopping more locally and cooperatively for good food, and retailers buying locally and directly from the producer.

In more detail, for W. Hudson, there are two different markets of fruits and vegetables that can be developed in a more sustainable manner in the UK:

- The first market concerns the caterers: fruits and vegetables arrive in London from all over the world where secondary wholesalers buy them to supply local hotels etc. According to W. Hudson, these secondary actors are not interested in providence and quality, and prices are affected by the competition from continent surpluses and products from developing countries. Therefore, it is impossible for local English producers to compete and to interest these secondary wholesalers. The only solution is thus to take them away, and to develop direct local food chains.
- The second market concerns supermarkets. Farmers do not sell directly to supermarkets, but to a marketing agent, who offers their production to the supermarkets. However, in a country where production all year round is not possible, these marketing agents tend to import far more than to buy locally. In addition, they own the produce they import, while they charge a percentage on the local produce sold. The benefit for them is thus greater on imported products. Therefore, they do not have any interest in defending

the interests of the local growers and local growers have no influence on supermarkets or marketing agents.

Luckily, there is an increasing consumer demand for local and quality food. W. Hudson believes that the challenge is now to make farmers and consumers realise that there is a local market and that is it worth fighting for.

Analysis of the sustainability challenges

Environmental challenges

The principle of local supply chains rely on a close link between producers and consumers. Therefore, the respect for the environment and the quality of the production are necessary to make it work. Indeed, people usually buy locally for more transparency, and because they know how the food has been produced. Therefore, growers cannot cheat about the quality of the production. Moreover, since the price will be more expensive, and people will have to make efforts to buy locally, the quality of the production has to be good. The concept has also many environmental benefits in terms of transport and packaging reduction due to the localised marketing.

Social challenges

According to W. Hudson, one of the main issues in developing local and cooperative solutions is the fragmentation of the farming industry, and in particular that farmers work in isolation and are not willing to share their innovations. Another important issue raised by W. Hudson in developing local supply chains is that farmers have to be involved in marketing, and are most of the time neither willing nor able to do it. Therefore, he believes that the solution is to encourage and assist them in grouping themselves, to be able to employ one person in charge of the marketing task and to diversify their production.

Human challenges

W. Hudson believes that one of the main barriers to the development of local and cooperative markets in the UK is the lack of food and food quality culture in the UK. According to him, French people are more concerned by the quality of the food they buy and eat since this is part of their culture and heritage, and their local markets may be more successful than in the UK. Therefore, he is currently taking part in a coalition of rural and community organisations promoting rural culture in England,

called the 'Rural Cultural Forum'. It is developing itself to increase the cultural awareness of the heritage of food and countryside by framing and delivering a cultural strategy for rural communities in England, campaigns in particular for arts and cultural investment in rural creativity, and in support of rural economic regeneration and social inclusion, and rural/urban reconnection.

Physical challenges

One of the main issues in the development of local supply chains is the convenience for customers. Indeed, local markets do not usually correspond to the modern way-of-life which requires adaptability of the shop and frequency of shopping. People have to make efforts to find a local market, shop or farm near the place where they live, and there is often not enough available to avoid conventional shopping. For instance, farm shops are very successful, but their footfall is low, as not many people are buying from them. Therefore, many farm shops now turn themselves into sorts of delicatessen, with a wide variety of good quality products at a reasonable price. Therefore, the adaptability of the infrastructures needs to be improved and education of the consumers is a real issue to make them understand why it cannot be as adaptable and convenient as supermarkets. Another physical challenge lies in the development of infrastructures necessary to allow better supply of the local markets. Indeed, to avoid imports as much as possible and ensure the viability of the local markets, solutions must be found to make a crop grow or make it last longer. Technical innovations can for example be found in other countries: W. Hudson discovered Spanish tunnels as a cheap alternative to glasshouses. These can be used in the UK and make a crop happen or last longer in an environmentally- and economically-friendly way. Indeed, they allow growing food in soil which gives better flavour, and limited energy and water consumption. Thus, for instance, tomatoes could be grown in the UK during six weeks of the year, which was not sustainably possible before.

Financial challenges

On the one hand, retailers' awareness and efforts for developing more sustainable supply chains can be very positive for UK growers. Indeed, retailers see the trend for local and indigenous food, but for W. Hudson it is motivated by the wrong reason: making money for their shareholders. Therefore, he thinks that they cannot be ready to pay the proper price, which is a barrier to the development of more sustainable supply chains. A mechanism need to be found to plan a minimum price for growers and to stop the food value deflation which forces people out of

business. Furthermore, one of the main financial challenges to make local production economically viable is to change the system according to which farmers must offer produce all year round to supermarkets. Indeed, growers are forced to import produce in winter to ensure their contract, and too often the consequence is that the import business becomes bigger than the farming business, as it is economically more viable, which leads to the death of the local production. On another hand, in local supply chains, price is still perceived as more expensive than in conventional supply chains. However, W. Hudson is convinced that it is possible to mitigate this difference by reducing all the side-costs, such as packaging, transport etc. But education will be also needed, to make people realise that the price is the same, and when there is a difference, that it is worthwhile.

Policy and support mechanism challenges

As we have seen, organic production is often associated with local marketing. However, W. Hudson is not convinced of the real benefit of organic farming. Indeed, he believes that there is a lot of confusion about the meaning of the logo and that the standards are more subjective than scientific-based. According to him, the 'Leaf' label, which is another set of environmental standards, is more sensible and workable, even though not recognised by consumers. However, he recognises that the organic market is highly beneficial in raising awareness of the health issues in particular. Support mechanisms can also be found in supermarkets. For instance, Coop is a chain of supermarkets owned by members/shareholders who can be anybody. Coop shops also have an area of shelf designated for local and seasonal product. Thus, they could be a starting point for dealing with supermarkets. However, more generally, to encourage more local consumption through supermarkets, EAFL is currently developing a label which would highlight locally produced food.

Even though the current model of food supply chain is not working, W. Hudson is aware that local food supply chains will not replace supermarkets. Indeed, there will always be a market for cheap and convenient food and there are not enough potential retail outlets for the amount of products that need to be sold. The chains of farm shops, box schemes etc. will grow slowly, but supermarkets have to be looked at, because they have the volume. For example, according to him, in 2004, only 8 % of the fruits and vegetables sold in the UK supermarkets were produced in the UK.

Conclusion

Strengths	Weaknesses
• Production respecting the environment • High-quality production • Minimisation of transport and packaging • Cooperative approach • Transmission of knowledge and culture • Increased consumer demand • Independence from the market • Reduction of the side costs	• Concept limited to the season of production • No clear requirement for the quality of production • Higher price and less convenience for customers, thus necessity to find ways to attract them • Too much alternative market, needs the involvement of retailers
Opportunities	**Threats**
• Diversification of the business • Opportunities to increase the period of production or to find new crops in adequacy with cold climates. • Educating consumers about the importance of eating seasonal and healthy food, but also of supporting their local farmers. • Rural Cultural Forum • Development of partnerships with some types of supermarkets • Development of a label for locally produced food	• Lack of food culture in the UK • Lack of seasonality culture among customers • Fragmentation of the farming industry • Inability and unwillingness of farmers to do marketing • Still economically more viable to import than to produce • Concurrence from supermarkets • Involvement of supermarkets limited by the financial constraints • Lack of support from government

Table 7-3: SWOT analysis of the local and cooperative solutions

7.1.4. Summary of the findings of the first stage of the research

The objective of this first part of the research was not to do a prospectus for a particular model of production of French beans, but rather to identify some common issues and benefits.

There are four main critical issues for sustainable farming, the first one concerning irrigation. Indeed, all over the world farmers face the threat of water scarcity and even with technologies such as micro-irrigation and the choice of adequate crops, the problem remains for the future. Likewise, the long-term viability of the three projects is an issue. Indeed, all of them were either facing a competition from cheaper products, a limited consumer base, limited convenience which can be an issue for our modern lifestyles or limited production over time. Farmers also face a

dilemma regarding the degree of innovation and technology they can use to ensure quality, reliability and professionalism of the production. Technologies enable them to be more efficient and facilitate the work, but are rarely environmentally-friendly, are very expensive and increase the dependence to fossil-fuels. In addition, traditional methods and techniques are more interesting in terms of quality of production. Finally, even though very beneficial, certification standards are a huge constraint for farmers due to their cost and the technical, time and financial capacities they require.

However, the study of these three approaches has demonstrated that sustainable approaches have huge benefits, and notably the respect for the environment. Indeed, even though this is not a primary condition of the approach, like for organic farming, the respect for the environment is a necessary condition to ensure quality of the production and to respond to the need for more transparency. In addition, a huge increase in the social capital has been noticed through the three case studies, either thanks to an increased proximity with consumers or to more cooperation between farmers which are able to share their successes and failures. This proximity also leads to a transmission of knowledge and culture. For example in the local approaches, consumers have the opportunity to discuss with producers, to understand how food is produced and even sometimes to rediscover traditional and forgotten species. Both producers and consumers also have huge opportunities for personal development and valuation. Finally, through sustainable approaches of food production, farmers gain a stable and higher income, in particular due to the certification standards which enable them to gain contracts and ask for a small premium.

Two of the three case studies were based on a localised approached. However, even though very interesting and presenting huge sustainable benefits, they are limited in their opportunities of market share expansion, since retailers have the volume and the lion's share of the market. They thus need to be involved in the development of more sustainable food supply chains.

7.2 Second phase of the research: study of retailers' efforts to develop further sustainable food supply chains

7.2.1. The retail market in Europe

The retail market in the EU has massively changed during recent decades. Retailers merge with each other to be more powerful, which leads to a reduction and harmonisation of the market. The purchasing process is managed centrally in each group, and even some groups are now merging their central purchase agencies to be able to negotiate harder the prices. Therefore, the retail groups are now more and more similar and tend to own different brands corresponding to different types of shops:

- 'Hypermarkets', which are often located in suburbs and have a surface of more than 2500m²;
- 'Supermarkets', which are similar to 'hypermarkets' but smaller (between 400 et 2500m²);
- 'Cash & carry', which are convenience stores, cash & carry, and online shops; and
- 'Hard discount', whose objective is to reduce the costs as much as possible with minimum service and minimum offer of nationally branded products.

For example, in France, the retail market is divided among seven main groups: Carrefour, Auchan, Cora, Leclerc, Casino, Système U and Mousquetaires, almost all of which have all types of shops. Only one brand in France, Monoprix, has still only one type of shops, located in town centres and targeted at wealthy people. Even though the retail landscape in the UK tends to be the same, the market being mainly split among Tesco, Waitrose, Sainsbury's, ASDA and Marks & Spencer, the situation is still slightly different, with more differences between the type of customer targeted by each brand. For example, ASDA is recognised by customers as low-price shops, while Waitrose focuses its activities on high-quality food.

These groups now tend to develop themselves worldwide, like Carrefour which is the European leader and second retailer worldwide. Therefore, these retail groups have a huge power and have the ability to control the supply chains globally.

7.2.2. Driving forces for more responsible food retailers

Retailers have proved they are viable businesses. Even though the trend is always to reduce the prices, their sustainability is not endangered economically. They control the supply chains, and thus have the power to ask the other actors along the supply chain to make the necessary effort to drop the prices. The main issues for retailers are to preserve their reputation. According to Ian Bowles, Head of CSR at ASDA, customers go to a shop for its location (41%), and then for its pricing policy (38%), which demonstrates to retailers that customers are not bound to a particular brand. Thus, retailers have to find ways to attract and retain them. As Terry Leahy, Chief Executive of Tesco explains in their 2006 CSR report, "the battle to win customers in the 21st century will increasingly be fought not just on value, choice and convenience but on being good neighbours, being active in communities, seizing the environmental challenges, and on behaving responsibly, fairly and honestly in all our actions". They have thus understood the necessity of offering alternatives to conventional business and conventional products to keep their consumers, who want more transparency, more quality, and are concerned by health issues.

Moreover, there has been a huge increase in ethical investment during recent years, which further motivates retailers to become more responsible. However, Carrefour recognises in its 2005 sustainability report that among the projects aimed at better meeting the expectations of their customers, some of them have economic goals, such as the development of alternative transport and energy savings. Therefore, the financial motivation is central. Mark Spurdens, technical manager for RB Organics, summarises these driving forces: "retailers currently make efforts to be more sustainable because it fits more closely with the culture and customer base of some, or because some of them may see it as a premium in terms of quality, but for all of them, they would not do it without a customer demand".

7.2.3. Overview of the efforts made by European retailers to develop more sustainable food supply chains

Like many businesses, retailers' change towards more transparency and consumers' satisfaction is concretised by the development of a Corporate Social Responsibility strategy. CSR strategies are more developed in big retail groups, such as Tesco or Asda in the UK, and Auchan or Carrefour in France. They have more money and more capacity to drive change. Therefore, to identify the gaps in retail for more

sustainable supply chains, it is interesting to compare the leaders in CSR in their country, Carrefour in France and Tesco in the UK, which both have shops worldwide and a wide range of brands, from hypermarkets to convenience stores (Carrefour (2005), Tesco (2006)). Since 2001, Carrefour has formalised its progressive approach based on three key commitments: quality and safety, respect for the environment, and economic and social responsibility and has lately been ranked fifth among the most socially responsible companies by Fortune magazine and listed in the main SRI indices. Tesco is sector leader in the Business in the Community (BiTC) Corporate Responsibility Index, the leading food and drug retailer in the Carbon Disclosure Project Climate Leadership Index and has also entered the Dow Jones Sustainability Index. However, the study also takes into account some other interesting retailers which have been accessed through the research.

The objective here is not to present an exhaustive list of the challenges and progresses made by retailers around the sustainability issues, but to identify and analyse the main points regarding the French beans supply chains. When developing CSR strategies, the retail groups create policies at the group scale and then implement them into each brand, according to their financial and human capability, but also to the public they target. Indeed, the objective of the groups in having so many different types of brands is to reach all types of consumer: for example, hypermarkets tend to reach the wealthy middle-class, while convenience stores tend to reach upper class and retired people, and hard discount shops the poorer people of the society. Therefore, the strategies are adapted to the function of the benefits they will support.

It is firstly interesting to notice that all retail brands which communicate about their CSR strategy have a motto summarising this strategy: for Tesco, this is "every little helps", for ASDA, "guilt-free shopping", and Carrefour has chosen "controlling the chain of responsibility". Their approach is very different, Tesco being turned more towards customers, expressing the idea that efforts towards sustainability can be done together, ASDA emphasises the idea of transparency within the supply chain, that they need a license to shop, while Carrefour's motto highlights the idea of transparency, control and quality at each stage of the supply chain. However, the content and area of application of the strategies are generally the same and regarding our subject can be summarised under the five following headings:

Environmental protection

Retailers' environmental strategy usually takes into account the following aspects:

- **Transport**: one of the main issues is the CO_2 emissions associated with the logistic phase. For example, ASDA counts 90 million air miles per year for transporting its food. Thus, the main solution adopted by retailers is to increase the efficiency of their distribution fleet by delivering more goods for each litre of fuel, maximising the use of local hubs and using back haul arrangements, and to move from air to sea freight wherever possible. Some like Carrefour and Tesco also try to promote the use of alternative methods, such as natural gas vehicles, or biofuels. Tesco even encourages its customers to use these biofuels, by incorporating biofuels into its standards petrol and diesel. Finally, the best solution remains to avoid importing produce as much as possible, but Ian Bowles admits that it is difficult to do, even though he tries to increase the period of production of vegetables in the UK, and to educate customers to eat seasonal and local.

- **Buildings and sites**: stores are also responsible for a huge consumption of energy, and their impact is highly visible. Therefore, energy reduction schemes are put in place with technologies such as energy efficient lighting, infra-red lighting sensors or dimming lighting. Carrefour supermarkets are also committed to setting up water-saving systems in their stores during new construction or remodelling and Tesco established in April 2006 a £100 million fund for investing in sustainable environmental technology. Finally, retailers also try to improve the monitoring of their cold facilities which represent a great part of the stores energy consumption and emission of greenhouse gases.

- **Packaging**: to reduce packaging, ASDA has developed partnerships with some food manufacturers, such as Unilever or Kellogg's. Indeed, retailers do not have a direct control on the packaging of most of the produce they sell, but can drive change. Regarding their own-brand products, retailers have different strategies depending on their commitment. According to RB Organic, examples of strategies are the design of packaging formats to minimise the packaging material and defect rates incurred when filling, or for vegetables the development of packaging that will be compost-able so that the user can peel the produce into the packaging and then compost it. In the UK, the strategy also concerns the carrier bags, most of which are still in plastic. Tesco for example encourages customer to adopt recyclable

bags, and is testing new bags that may be even more durable. Staffs are also encouraged to help customers packing to reduce the amount of bags used.

Responsible supplies

One of the main demands from consumers concerns the control and transparency of the supply chains. Quality and respect of the environmental and social issues along the chain are from now on fundamental for retailers.

- **Guaranteeing food safety**: the main tool that retailers use to guarantee food safety along the supply chain is to draw up international standards for auditing their suppliers. For Carrefour, systematic audits are conducted, with respect to health and safety conditions, risk control, traceability or compliance with specifications. Other policies conformed to consumers demand are developed and imposed to all suppliers, for instance non-GMO policy. For example, GM food is prohibited in all Tesco own-brands, and all branded products containing GM ingredients are labelled as such. However, they remain attentive to any changes in consumer preferences and their own position about GM food is not clear.

- **Respect for the environment and promotion of high social standards along the supply chain**: retailers' commitment on these aspects varies a lot. Indeed, low-price strategy brands are less demanding than high-standards brands. For example, Mark Spurdens from RB Organic explains that most retailers have guidelines or refer to the British Retail Consortium guidelines, but some of them also have ethical and social policies, such as Waitrose which is most concerned by quality issues. Some of them, such as Carrefour and Tesco, are committed to encourage the wider industry to move to more environmentally friendly practices such as integrated farming, and to do that, are ready to offer help and advice. For instance RB Organic organises regular group sessions aimed at sharing best practice between growers and developing new methods and techniques.

- **Partnership approach to promote supplier responsibility**, based on sharing knowledge and listening to suppliers' feedback. Indeed, as retailers claim requiring high ethical and environmental standards from their suppliers, notably for their own lines of responsible products, they need to help them understand the stakes and implement best practices. For its own-brand products, Carrefour exchanges its know-how with its suppliers and

tries to raise their awareness of the sustainability issues. This relies on trust and long-term commitment and is done through supplier meetings, training and conferences but also partnerships with NGOs and international organisations, such as the International Federation for Human Rights (FIDH), to develop sets of benchmarks and audit methodologies to monitor suppliers. However, this approach is not taken on board by all retailers, and some of them still favour short term hard negotiation on price only with their suppliers rather than close, trusting and long term relationship.

Local and sustainable supplies

Retailers are starting to realise that to have more sustainable supply chains, small improvements such as previously seen are not enough anymore, and that the whole concept need to be redesigned:

- **Ethical trading** consists of respecting ethics and transparency in all situations and developing more ethical chains. Most of the retailers claim being committed to uphold the standards along the supply chain. For example, Tesco is a founding member of the Ethical Trading Initiative (ETI) and uses the ETI Base Code as the standard for its Ethical Trading Policy. All commercial staff is trained to ethical trading and their purchasing practices must reflect it. In addition, they are committed to train their suppliers and lead the movement worldwide. Most of the retailers now also sell Fairtrade products and develop their own fair-trade brands, a priori for increasing the number of customers choosing Fairtrade. In the UK, the Fairtrade Fortnight is the opportunity for retailers to make promotions on Fairtrade products and to raise awareness. When they are consistent like Tesco, they also serve Fairtrade coffee for their employees in vending machines.

- **Local sourcing** now represents a substantial portion of the fruit and vegetables supplies of the big retailers, besides products negotiated at the international level and national products negotiated by the country purchasing offices. Tesco claims being willing to make it easier for small suppliers to access its buyers by hosting open days in every region. The benefits of local sourcing are huge for the local economy, but also for consumers which can have access to fresher and taster products. In addition, many retailers in France now develop their own brands to highlight regional products, such as 'Reflets de France' (France) or 'Terra d'Italia' (Italy) for Carrefour. The concept is to develop partnerships with SMEs for

promoting their regional development and encouraging innovation. In France, 147 regional companies distribute their products nationally through 'Reflets de France' and some even internationally.

Local community development

Developing more sustainable supply chains means also contributing to local community development. This has two main aspects:

- **Developing links with local communities**: it is often argued that retailers contribute to the depopulation of town centres and rural areas. They now want to reopen the dialogue with local communities and are currently returning to the concept of neighbourhood shops. Every main group, in particular Carrefour and Tesco, are developing these shops, in these cases called 'Proxi' for proximity and 'Tesco Express'. Carrefour intends to set up a Proxi store in every town with fewer than 1,500 inhabitants that has lost or is about to lose its convenience store, and to do that has partnered up with an association, the 'Renouveau Villages' (Renewed Villages) to support candidates for company creation. It has also developed a partnership with the French post office to maintain postal service in the countryside. Finally, retailers also try to adapt their business to the cultural and lifestyles differences relevant to each country, in terms of produce, look of store and approach to selling.

- **Contributing to community development**: retailers are also trying to redistribute the profit they make from their business, by helping disadvantages areas and people in difficulty. Examples of actions are the contribution of Sainsbury's to the purchase of sports equipment for children, or the Flagship Community Programme from Marks & Spencer which received the Company of the Year Employability award. This program focuses on integrating socially excluded people into work, such as homeless, disabled, long unemployed and young people with no education. The concept is that a charity is responsible for finding people, who are then tutored and trained between two and four weeks by M&S. 8000 people have been involved in the last two years, and 40% have then been recruited to work at M&S. The benefit for M&S is huge, as it recruits different people, and has local employees in local shops. M&S is also now trying to take suppliers on board with this programme.

Encouraging responsible consumption

The first effort retailers claim to make is to encourage more responsible consumption from their consumers. To do that, different actions are implemented:

- **Promoting and raising awareness about responsible consumption** mainly through product animation, magazines, leaflets or websites. Ian Bowles, Head of CSR at ASDA explained that 55 percent of the communication with customers is done through the shops. In addition, even though customers claim to be concerned by personal and family health issues, being enthusiastic about local and seasonal food, and willing to pay for premium, there is a real difference with what they actually do. Therefore, there is a real need for education by the retailers, and it is mainly done in store. For example, in March 2005, Carrefour launched in partnership with WWF France in its hypermarkets a website called 'Académie de la nature', intending to inform and raise awareness about environmental protection and the rich French regional heritages. In addition, four times per year since 2004 in its hard-discount stores, Carrefour has offered 'a week of balanced menus for a family of four', which consists of choosing products from the shop mix to make up the menus and to demonstrate that it is possible to eat a balanced diet on a tight budget.

- **Listing and developing responsible products**: the promotion of responsible consumption needs to be associated with the offer of responsible products clearly labelled. All brands now offer organic and Fairtrade products, which give them competitive advantage. Retailers also develop their own lines of responsible products, which either reflect an ecologically or socially responsible approach. For Carrefour, these products are part of their 'Carrefour Quality Line'. At Tesco, all farms growing vegetables for Tesco must comply with an integrated farm management scheme called 'Nature's Choice', consisting of high safety and environmental standards.

- **Changing everyday habits and behaviours:** to encourage more responsible habits, retailers have to give consumers solutions to change. For instance, to increase the consumption of organic and Fairtrade products, retailers do up to twelve special offers per year. However, their effect seems limited. Ian Bowles explains indeed that they never noticed any increase of sales after the operations. Moreover, these operations are limited in number by the need of retailers to make money. As Ian Bowles explained, the increase of volume sold during these operations compensates the margin

loss, but the reduction of price must remain rare. Another example is the commitment of all retailers to increase the consumption of fruits and vegetables, for instance Tesco ran 230 promotions on fruits and vegetables in 2005/2006.

7.2.4. Reality of these efforts in the particular case of purchasing, retailing and marketing French beans in France

Engaging with employees of different brands in France was the opportunity to understand how CSR policies were implemented in reality to the purchase of fruits and vegetables in general and of French beans in particular.

Lack of communication within the organisations?

When engaging with the persons in charge of purchasing fruits and vegetables in the shops, it was interesting to notice that they were almost never aware of the CSR strategy of their brand. There is an obvious lack of communication within the retail brands, in opposition to what they state in their reports analysed previously. Indeed, three people out of six affirmed that the price of organic and Fairtrade products was not acceptable, and that some people were making money out of it. Another person did not know what organic vegetables are, and even the person responsible for the purchase of fruits and vegetables in the shop leading the organic market estimated that "this is just a market niche, there is already too much place given to organic products". However, this lack of communication may be explained by the fact that in reality, the sustainability, marketing and purchase tasks are not dealt with by the same people. In retail groups, services are demarcated and the communication between them seems limited. For example, it has been very difficult for the researcher to reach the right person to answer questions about sustainability in purchase and marketing. Sustainability seems to remain a separated area and not a core value of the business.

Diverse quality requirements

The quality requirements for French beans productions are actually very different depending on the retailers. In France, only Monoprix is a member of the EurepGap Fruit and Vegetables partnership, while in the UK Tesco, Waitrose, Sainsbury's, ASDA, M&S, Somerfield and WM Morrisons are all members. Therefore, in France,

retailers have their own requirements, developed for their own brands like 'Reflets de France'.

Limited place for responsible products

It was also interesting to notice that in opposition to what they state, organic produce are not sold by all retailers. Indeed, four people out of seven had neither organic, nor Fairtrade produce. The Fairtrade offer is very limited, the only fresh products than can be found are in general avocados and bananas. One person interviewed (Hyper U) did not even know what 'Fairtrade' means. Another person interviewed (Carrefour) suggested that the label Fairtrade does not yet exist for vegetables. Another one used to have organic produce, but at the time of the interview did not sell them anymore. It appeared after analysis that only hypermarkets (Auchan, Cora, Carrefour, Leclerc) are actually offering this type of products. Two reasons were generally given to explain the absence of responsible produce: either that there was no customer demand, or that this was not a priority of the shop for space or strategic reasons: "this is too expensive", "our producers do not offer enough good quality", "we do not have enough space on the shelf to offer organic produce", and "we have too much waste, people prefer buying organic produce in specialised shops, they trust them more than supermarkets to do organic" were some examples of reasons. This last explanation is confirmed by the development of organic supermarkets and box schemes in France, which are perceived as better positioned for this type of product.

However, it is important to specify that the population in the region of the study is not wealthy in the mean, which may explain the small percentage of supermarkets offering organic products. Moreover, the hypermarket considered as targeting the wealthiest population has the most abundant organic area. Finally, there was in general no particular strategy to highlight and increase the sales of responsible produce. According to several interviewees, they sometimes did special offers, but usually when they needed to sell off the production. Carrefour and Cora only, which are the sustainability leaders in the area of research, have national sustainability, organic or Fairtrade operations (a couple for Cora, a dozen for Carrefour), during which they highlight four or five particular products.

Local sourcing as a complement for ensuring regular and quality supply

The reality of the local sourcing is different of what retailers claim. Even though there are differences between retailers, functions of their size and their location, in general the purchase is organised at the group level and does not favour local sourcing. The central purchasing departments choose the suppliers and negotiate the price. Then, the persons responsible for the fruits and vegetables area in the shops buy the produce they need to the central purchasing department, which makes the logistics easier but increases the distance travelled by food, as all products are gathered in regional distribution centres before being sent to the shops. These people can sometimes have their own local producers, but only for fresh products, usually to sway the offer from the central purchasing department. Indeed, their aim is to offer the best quality possible to the customers and to have regular supplies. Therefore, they have small and local producers which enable them to have a regular and quality supply. In addition, people who choose to have their own local producers generally do it for personal reasons, as they said "to help the local economy and our neighbours". Only one brand, Monoprix, offer the same products everywhere and at the same price. Indeed, the strategy of the brand, summarised in its name, is to have a unique price in all its shops. Therefore, they cannot work with local producers.

Real opportunities for local sourcing of French beans

According to the interviewees, three types of beans are proposed in French supermarkets:
- Kenyan beans which are appreciated for their high-quality, being hand-harvested and extra fine, even though they are a lot more expensive (on average 2,5 times). Some interviewees even emphasised the fact that Kenyan beans are almost never in promotion, because their quality is such that it is very difficult to negotiate. The Kenyan beans are also usually conditioned to facilitate transport.
- On contrary, French beans from France are only fine, harvested by machines and of average quality.
- Moroccan beans are a lot less expensive than French and Kenyan beans, and compete with the French ones as soon as the quality of the latter turns sour.

Therefore, the general policy in French supermarkets is to favour French beans as much as possible during summer as fresh and unsorted beans, one person

interviewed even explained that she always tried to find a compromise between the offer from the central purchasing department and her own producers to ensure French produce. The only reason is that consumers prefer eating French beans from France for freshness reasons. Then retailers purchase Moroccan beans. Kenyan beans are imported all year round due to their quality beyond compare. Therefore, even in summer they compete with French beans, the only difference being the packaging.

However, there are real opportunities for locally produced French beans during summer, even though the interviewees claim that there is no financial advantage and that the competition from Kenyan produce is severe. Indeed, the researcher noticed that the retailers may favour the Kenyan produce by hiding the difference of price with marketing techniques. For example, in Auchan, Kenyan beans were sold in containers of 400g at 4,98€ / kg , and French beans unsorted at 1,99€ / kg. However, the price of the container only was indicated for the Kenyan beans, which if consumers do not pay attention, gives the impression that it is the same price for both products. Nevertheless, as French consumers prefer eating beans from France, if local producers can compete on price and quality aspects, they may have more space on the shelf.

7.3 Third phase of the research: analysis of the consumers' behaviour and perception of the different production patterns

Nineteen French people have been interviewed, of which seven were less than 30 years old and two more than sixty. Then, five of them were from working class, eleven from middle-class and three retired.

7.3.1. Current trends in the consumption of beans

The interviews have revealed some interesting trends in the consumption patterns of the people interviewed. Firstly, even though ready-to-cook meals have more success among young people, who either do not know or do not have time to cook, people prefer preparing their vegetables themselves, mainly because they are sure of the ingredients, and thus of the quality and taste of the preparation (see graph 7-1). People claimed also at many occasions being worried by the chemicals, preservatives and other colourings that processed food contain.
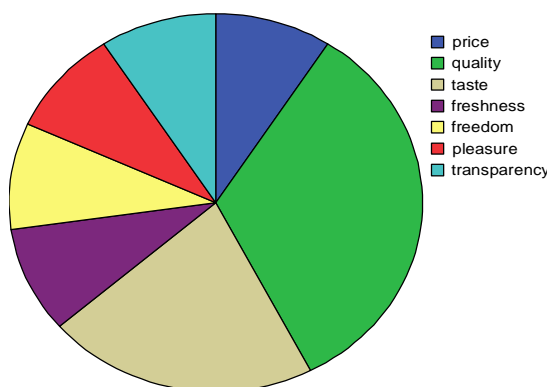
Figure 7-1: reasons for preferring cooking
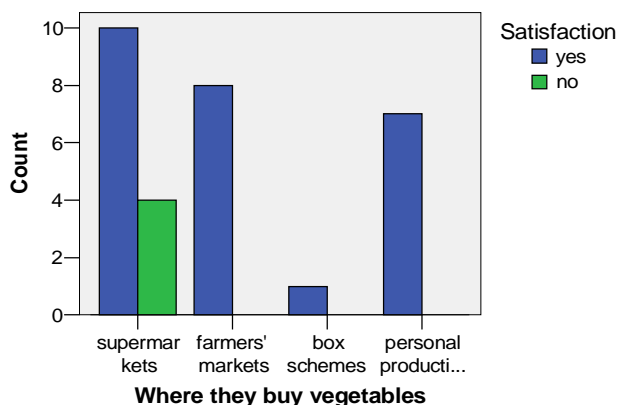
Figure 7-2: where people usually buy vegetables

Not surprisingly, most people buy their vegetables in supermarkets. However, farmers' markets have great success and are seen by many people as a good alternative for fruits and vegetables. Indeed, the satisfaction rate of people buying in supermarkets is quite low, and many interviewees reproach them for a limited choice and too often bad taste and poor quality of the produce. The only advantages mentioned for buying in supermarkets are the convenience and price, although prices are often in reality lower in farmers' markets. Moreover, farmers' markets are perceived as providing fresher products, and being more transparent. Finally, box schemes still concern a minority of people, mainly because the concept is not marketed (see fig 7-2).

76

Regarding the consumption of French beans, people prefer eating them fresh for the quality and taste, and canned for the price. Frozen beans and beans in mason jars generally represent good alternatives to fresh beans in winter, respectively for the price and convenience, and for the quality and taste (see fig 7-3).
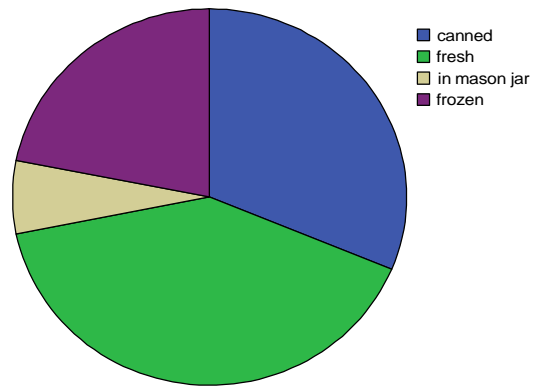
Figure 7-3: how people eat French beans

7.3.2. Awareness and perception of the different modes of production by customers

The researcher firstly tried to identify how many people were aware of the process vegetables have to go through in common supply chains before arriving on the shelf. Surprisingly or not, 90 percent of them were unable to describe it. Then, even though at first sight, they all claimed being concerned by the protection of the environment, the answers were different when they were asked precising how.

For example, 75 percent of the interviewees claimed paying attention to the seasonality of the vegetables they buy, mainly to have fresher and tastier products, and fifteen other percent recognise not paying enough attention to it. However, buying seasonal products for minimising transport pollution was only the fourth reason (see fig 7-4). Then, when asked whether long-distance travelling was an issue for them, 65 percent of

Figure 7-4: reasons to pay attention to the seasonality of the products

the interviewees answered that it was not. And interestingly, when it was an issue, it was for freshness matters. Even though people are aware that transport has a huge impact on the environment, they do not associate it with the food they buy. Therefore, when trying to understand which aspects in the respect of the environment were important for them in the decision-making process of buying food, it appeared that there were only the massive use of chemicals (preservatives

and colouring in preparation, all sorts in production) and the use of genetically modified organisms, which both refer to health issues.

Likewise, more than 60 percent of the interviewees claimed that the origin of the food they buy is important for them and that they prefer helping producers from their country, for patriotic reasons and because they often consider that their products are better (see graph 7-5). Nevertheless, according to the graph 7-6, origin of production is generally only the fourth criteria they take into account when they buy vegetables. Food origin is only considered by consumers for freshness and health matters, for instance when scandals have been highlighted in a particular country. However, some people explained that they try to buy products produced 'where they should be produced', for example by favouring French producers for traditionally French products and producers from developing countries for products such as coffee, banana etc.

Finally, only 35 percent of the interviewees recognised taking into account social and ethical aspects of the production when they buy food, mainly due to the fact that they do not have any information about these issues. Indeed, people emphasised the lack of information regarding the way food has been produced, prepared and packaged. They want to know more and pretend that when they are aware of a company not respecting ethical and social aspects, they are more than willing to boycott it. But it is really hard to access information on these issues.
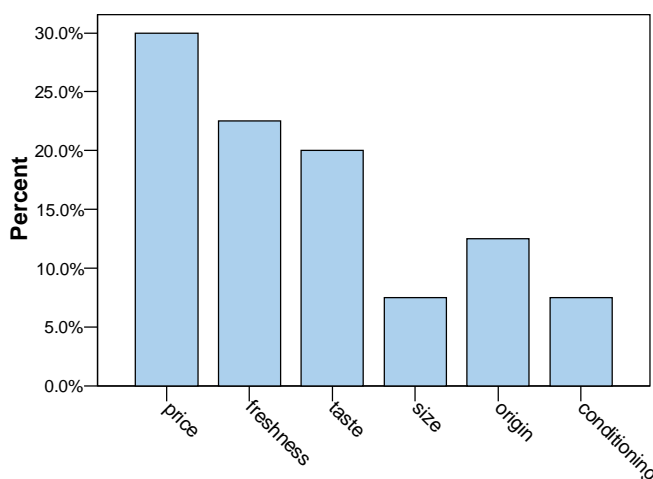
Figure 7-6: critera when people buy vegetables
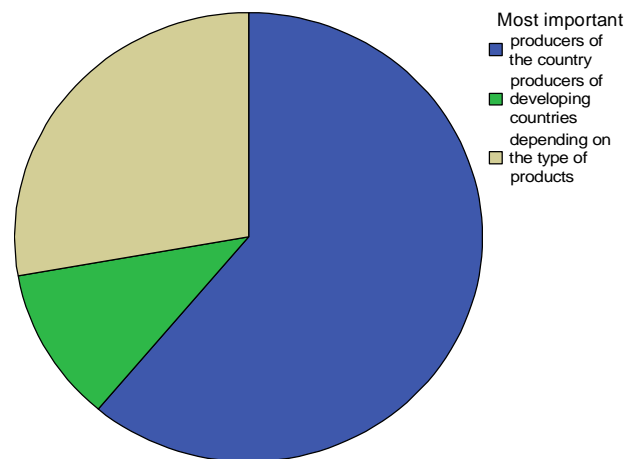
Figure 7-5: local producers versus developing countries

7.3.3. Perception and knowledge of labels

A general feeling among customers is that when they buy vegetables in supermarkets, they tend to trust labels (fig 7-7). Indeed, they once again claimed not having enough information on the production methods of the conventional products, and therefore do not have the choice, as labels are the only guarantees of good production (fig 7-8). However, when asked whether they already have bought Fairtrade or organic products, the answer is slightly different.
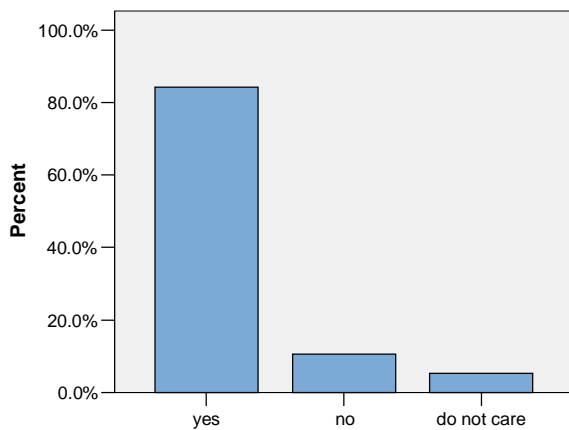
Figure 7-7: trust in labels and standards for food
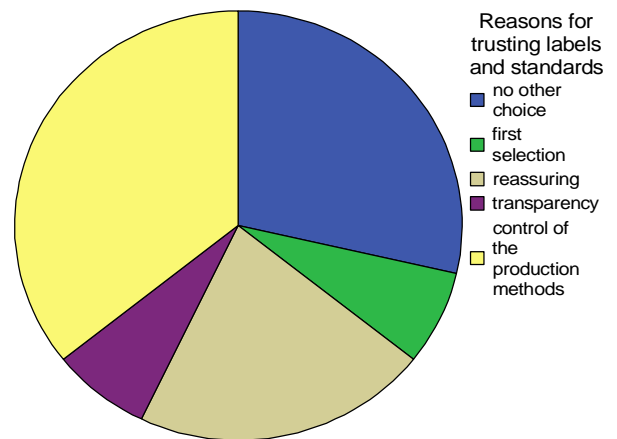
Figure 7-8: reasons for trusting labels and standards

Organic is slightly more recognised by people due to the amount of advertising done. Fairtrade is appreciated for two main reasons: mostly for the enhanced flavour of the products, but also sometimes for the opportunity it gives to discover new varieties, like quinoa which represents an alternative to common rice and pasta. Organic products are also mainly appreciated for their enhanced flavour, but also for their freshness and authenticity. The Fairtrade business is currently increasing, due to big brands starting to develop it. However, the perception of these standards does not always reflect the reality and there is often confusion in their meaning. For example, Fairtrade is perceived as a help for small producers in developing countries as well as a guarantee for good labour conditions and respect for the environment, but paying a fair price for the product which is the basis of the concept was cited by only one interviewee. The perception of the organic standard is more in line with the reality, people defining it as respectful from the environment and high-quality production. Thus, even though the certification standards are now generally well recognised by the general public, people still seem to have an obscure perception of them.

The main barrier to the development of responsible products remains the price. For most people, whatever the social class they belong to, the difference of price is a problem (see fig 7-9). There still is the perception, especially among lower class people, that people are making money out of these products. However, it is interesting to notice that especially among middle-class people, they tend to accept this difference, because they consider that the price is fair (see fig 7-10), or if they do not understand the difference, that they are willing to know why there is one. Therefore, it seems that the development of these products is only constrained by the amount and quality of information given to consumers.

Figure 7-9: is the difference of price a problem
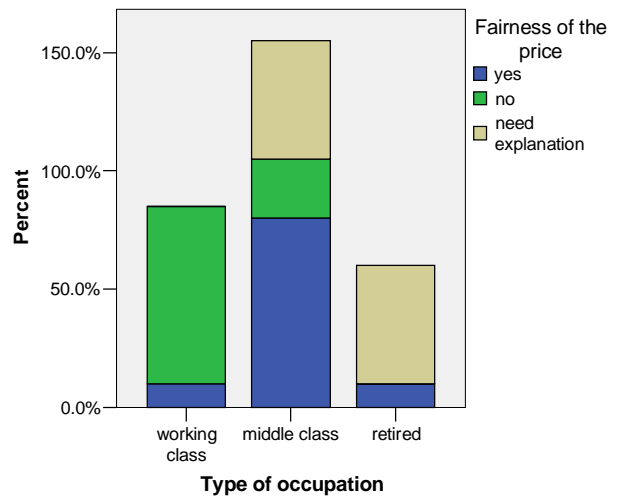
Figure 7-10: Fairness of the price

Finally, labels may have an impact on the general consumption patterns of people, by raising their awareness, especially among middle-class people. Indeed, even though most people think that buying with labels is just part of a global behavioural change, some people explained to the researcher that buying organic vegetables led them to go to organic supermarkets, where they discovered other products, such as cleaning products, and were encouraged to buy responsibly on a general basis. In addition, another interviewee emphasised the fact that buying more expensive products encouraged her to buy less but also to be careful not to waste. Thus, labels may have a general influence towards more sustainable behaviours. Most of people remain sceptical on the reality and benefits of these labels but agree that this is a good way to start.

7.3.4. Conclusion

These results must not be looked at from a statistical perspective. Indeed, the number of consumers interviewed is too small to ensure a viable statistical analysis. However, the trends noticed are still interesting, and some important issues can be highlighted:

- **The consumers' behaviour is mainly driven by health and price issues**: in general, consumers are still not aware of the issues linked to global production and consumption. Only a few did not find abnormal to eat tomatoes from the Netherlands in summer, when they are plenty in France, or who prefer avoiding non-seasonal products. The price is still too often driving consumption patterns, even in a country reputed for its gastronomy, and where French beans are part of the food culture. Moreover, when consumers pay attention to the type of food they buy, it is usually for health and freshness reasons, more than for environmental or social aspects.

- **The price of 'responsible products' is still perceived as a problem**: responsible consumers, even though in increasing number, are still a minority due to the price of responsible products. However, many people pretended that they are ready to make efforts and to try these products if someone explains to them why it is worth paying more for them.

- **Lack of information**: at the different stages of the interview, consumers were surprised by the questions and realised how much they lack information about how the food is produced and prepared in general. They are interested in knowing more about the models of production to have the ability to buy knowingly and responsibly, and that is why more than 80 percent of the interviewees trust certification standards for food. This approach has already been adopted by many individuals, and they are still increasing in number. Moreover, even those who do not have the ability to access information are ready to be more careful and to make some efforts. For example, many people interviewed were interested by the issues raised through the questionnaire and said that they would now try to pay attention to all these aspects.

- **Lack of motivation**: sustainable behaviours in consumption are still considered as a "citizen duty" or "militant action". For example, those who go to farmers' markets often consider it as a mean to help them 'fight against big retailers'. However, it seems that people want to do more, but need incentives for that. For instance, the most quoted individual action for

81

preserving the environment was 'waste sorting'. Indeed, this has become compulsory in France these last years, and people now consider it as normal. Moreover, it is very important to highlight the importance of habits when people do shopping. Most people have their reference products, or even brand references, and just buy products from these brands, regardless of the production methods, origin or even price. Therefore, people are willing to change their consumption patterns but need motivation and incentives for that.

Chapter 8   Discussion

The discussion outlines the sustainability implications of the different approaches presented previously. The aim of the thesis is not to do a prospectus for a particular model of alternative production of French beans, but rather to identify through the different case studies what are the drivers of, and barriers to the development of more sustainable food supply chains and which efforts must be made to improve them and to develop a viable model of sustainable farming in a context of global economy.

The different approaches to the production of French beans presented previously all have more or less interesting aspects. However, they seem to have different opportunities of evolution in the future. For instance, the concept presented through the French case study seems very successful and protected from external threats that may endanger it. The concept is led and kept alive by customers, and the farmer has other opportunities to sell his production if needed, which ensures the economical viability and durability of the concept. In addition, the grower manages the natural capital he relies on in such a way that he is protecting it. However, this concept is limited by the way it is designed, and may hardly become a mainstream alternative model to industrial farming. Therefore, even though very interesting and with few weaknesses and threats as we have seen through the SWOT analysis, it will remain a minority alternative. On the other hand, the UK case study seems more realistic in its acknowledgement of the need to involve retailers, but there are huge weaknesses and threats to its success. Therefore, this might be a solution but it will need commitment, improvements and efforts from many of its stakeholders. Finally, the Umoja project certainly remains the concept which is the more in adequacy with the way business in general is now organised. Its sustainability potential is real, and there are few threats and weaknesses.

8.1   What are the real drivers for more sustainable food supply chains?

The development of alternatives to the current model of global and industrial food production is generally perceived as customer-led. Indeed, as we have seen, retailers admit offering responsible products because consumers are concerned about the food they buy, and restraining the presence of GM food on their shelves because consumers are concerned about their possible harmful consequences.

However, the research carried out revealed that customers actually lack information and their behaviour is greatly influenced by retailers' marketing. Therefore, there is certainly a demand from consumers for these alternative models, but the real driving force to develop further these new forms of food production will come from the retailers. Retailers are in a unique position where they control all the supply chain. They can influence every actor in the chains through which the products they retail have to go, in particular when the products are own-branded.

For example, most of the farmers in European countries are already convinced that they need to change the way they farm and do business, usually for personal health and financial issues. Indeed, the use of chemicals has been proven by many different studies as very harmful for farmers and their offspring, and it is more and more difficult for them to make money out of their activity due to the increasing operating costs and the way supply chains are designed. Therefore, they realise that if they want to be able to continue their activity, they need to change the way they do it. However, they cannot do it alone, and thus need help, in particular from the market. That is where retailers can be helpful by increasing the visibility of alternative products on their shelves, which would encourage more consumers to buy these products, and then increase the market share of these alternatives. Therefore, with a bigger market share, producers would be more encouraged to change for these alternatives.

As a matter of course there will always be a market for cheap and convenient food. However, the awareness among customers is rising and it seems that mainstream retailers are committed to take part in the development of more sustainable food supply chains by reducing the impact of their business on the environment and society, but also by developing new ways of doing business. The only issue concerns their motivation to do it. Opponents to retailers generally claim that their involvement in the development of more sustainable supply chains is only motivated by the desire to make money for their shareholders and to find new business opportunities, and we can wonder whether a financial motivation would not limit the change and compromise the sustainability of the alternatives. Nobody can tell whether they are really convinced of the real necessity to make things change by integrating the principles of sustainable development in their business, but their degree of commitment will certainly make the difference in the success of sustainable alternatives.

8.2 Cooperative approaches for the development of sustainable alternatives

As we have seen, there is certainly not one way to develop more sustainable food production and consumption models, but many which differ in bottom line, scope, number of stakeholders involved etc. However, what is certainly common to all of them is the cooperative approach they consider. The three case studies presented in the first part of the research were indeed based on partnerships, either between farmers, between consumers or between farmers and consumers. Then, at the retail level, it is noticeable how much retailers need to build partnerships with their stakeholders to achieve the goals of their sustainable development strategy. With external stakeholders such as NGOs, these partnerships are aimed at developing new strategies or concepts on an equal basis, while with internal stakeholders like food manufacturers or intermediaries, they are intended to spread best practices and are generally more built on bottom-up relationships.

Therefore, to develop a sustainable food production system and to ensure its success, the involvement of all the actors along the supply chain is required; otherwise it is only a matter of reducing the environmental impacts or improving a particular area. To be really sustainable, the whole system needs to be redesigned and in practice requires working in partnership at the different stages of the supply chain with internal stakeholders like food manufacturers, suppliers or consumers, as well as external stakeholders, such as NGOs or government. In addition, probably all of them must involve food retailers which have a central role in these supply chains. However, the involvement and participation of these actors is difficult to implement, and will be progressive. That is also why external stakeholders such as NGOs can play a crucial role as facilitators. The coordination of the whole supply chain towards such a goal may appear utopian but the first steps made by retailers such as Carrefour give some hope. Until now, all the existing alternatives to the current model of food production have been established through partnerships. Likewise, the best examples of successful partnerships are the labels and standards, for instance EurepGap, which has been created by an alliance of European supermarkets.

8.3   What is the real influence of certification standards and support mechanisms on the development of sustainable alternatives?

The main benefits of the labels and standards of certification are that they help farmers differentiate their production and that they raise awareness along the supply chain. Indeed, one of the main issues for farmers in a context of global economy is to market their production and to differentiate it from the competition. Thus, certifications such as organic and Fairtrade give them the proof that their production complies with a particular set of criteria. Therefore, it is easier for them to gain contracts and attract consumers. A generic standard like EurepGap may be more appropriate for farmers in developing countries as it has been created by European retailers to ensure minimum quality criteria along the supply chain and can thus help them gain contracts in European countries. Nevertheless, taken as a method of sound management, EurepGap can also be very beneficial for farmers in European countries to help them gain contracts in supermarkets and ensure the quality of their production. Support mechanisms are also very beneficial by helping farmers strengthen and stabilise their position. Indeed, with a contract, crops cannot be rejected, which ensures farmers receive a stable income and are less vulnerable. Moreover, even though these support mechanisms may only represent for retailers huge business opportunities, at least these have understood that by either developing their own or adopting existing ones, they can very efficiently attract and retain new customers, who appreciate in these mechanisms the opportunity to buy knowingly and responsibly.

However, support mechanisms seem to be limited in scope and time. Indeed, they all focus on particular areas of improvement, such as environment or society. Their principle is to set minimum requirements, which leads them to be criticised. For instance, the organic certification in the UK recommends avoiding antibiotics and drugs on a regular basis for animals but do not forbid them to treat diseases. Therefore, some people consider this as not enough and may foster polemics on the real interest of the label. In addition, when labels are successful, they tend to be supported by more and more actors of the system and then lose their status of alternative model. Their impact on customers may thus be considerably reduced. Moreover, an issue often noticed with this kind of support mechanism is that their success leads to their multiplication which in turn leads to confusion among customers. They are then perceived as less trustable and one of them usually takes the advantage. However, it is not always the most interesting but rather the most

marketed or the less alternative option. For instance in the UK, Leaf is sometimes perceived as more workable and sensitive than the organic standards developed by the Soil Association, but the latter is a lot more recognised by consumers. Finally, the main barrier to the development of these labels is that they generally cost a lot and are time-consuming, especially due to massive paperwork, without ensuring a contract at the end. For instance, the cost of EurepGap certification for Kenyan farmers may represent a month of turnover, but EurepGap is not used everywhere in Europe, notably in France where supermarkets prefer having their own or existing standards. The expenditure may thus not be justified.

8.4   Involvement of the food retailers: issues and benefits

As we have seen, the cooperation of retailers to develop more sustainable food supply chains is necessary and the efforts they have already made must be acknowledged. The benefits may be huge if they were able to influence further the actors along the supply chain and to take part in raising awareness among the general public. However, retailers' commitment to drive change differs hugely as a function of their customer base and line of action. Some of them are definitely committed to work in partnership in order to improve their sustainability performance, but they are still a minority. The business context of sustainable development, and in particular the benefits that taking on board the sustainability principles can bring, are not understood by the whole retail industry.

Certainly, a good way to encourage them to change would be to have leading successful examples: if the leaders prove that they can make money and be profitable by changing the way they do business, the competitors would probably follow. Another opportunity to motivate these retailers would be to encourage the development of alternative food retailers, such as 'Coop' in the UK and 'Biocoop' in France. These retailers differ in the way they do business because they do not have the same motivation, are committed to the development of alternative concepts and are usually not-for-profit. Therefore, these new retailers could be used as a mean to help farmers have access to the market and raise awareness of the other retailers which then may be ready to make some efforts to retail the products and at the same time guarantee minimum conditions.

However, even when they have a real commitment, retailers struggle in implementing their sustainability strategy. Indeed, due to the complexity of the

business, the way supply chains are conceived and the scope of their activities, successful implementation requires time and involvement of all actors inside the business. However, as we have seen, it seems difficult to involve all the staff, and in particular to raise awareness of the lowest positions. Therefore, retailers need to develop their communication and to point it not only towards their external stakeholders such as customers and NGOs who ask for accountability, but also towards their employees who need to understand the strategy and the reasoning behind it. More than communicating about their CSR strategy, they also need to make the sustainability principles part of their core values and principles, if they want them to have a real meaning and application in their organisation.

Governments may also have a huge role to play in encouraging retailers to take part in the change, by allocating the subsidies and other financial incentives differently, for example by stopping subsidies for importation. Likewise, legislation may have a huge impact on retailers. For instance, forcing retailers to implement minimum standards could make them realise the benefits on customers and their finances, and then would perhaps encourage them to do more. A good example is the recent interdiction in France for retailers to give non-recyclable plastic bags at the checkouts, which helped them reduce their costs and notice how beneficial were their associated campaign for protecting the environment on customers.

8.5   Is a redesign of the food supply chains possible?

One may question the usefulness of importing produce traditionally grown in European countries from all over the world. Slight improvements certainly can be made regarding transportation issues but they will only contribute to reducing the negative impacts and not the problem. Changing the way produce are conditioned or preferring trains or ships to planes are possible solutions but are very difficult to implement and are generally applicable to a minor part of the problem. Therefore, the whole system of the supply chain needs to be redesigned and there may be some possible solutions.

In the particular case of French beans, we have seen through the research that the success of the Kenyan produce is due to the fact than Kenyan farmers produce cheaper and better quality beans. Therefore, to be able to compete with their produce and reduce the un-sustainability of the food supply chains, European farmers have to play on these two aspects: price and quality. That is why more and

more people believe in the development of local supply chains to solve the problem. Indeed, by cutting the intermediaries, European farmers should be able to offer produce at the same price as produce from developing countries, the costs of transport, packaging and others making up for the differences in production costs. Then, their quality could easily be as good as the quality of the Kenyan produce by practicing an environmentally-sound farming and avoiding the use of machineries and industrial inputs. Indeed, without complying with a particular set of criteria, protecting the environment is a necessary condition of farming for local supply chains, because the proximity between producers and consumers requires more transparency and better quality.

However, local chains as they have been presented through the case studies, even though interesting, cannot become the norm. Their market share will probably increase over time, but will stay limited to a particular type of consumers and a particular type of products. That is why retailers need to be involved in this concept to make it real. Retailers are also aware of that and a first step has already been made with the development of convenience stores. Nevertheless, this progress is only outward as the supply chain behind is still the same, based on regional distribution centres. These shops do revitalise the local communities, but the products are no more local than in suburban supermarkets and even perhaps travel more as local shops may be more far away from the regional distribution centres. Therefore, the concept needs to be improved and a solution might be to build partnerships between groups of local farmers and these convenience stores. Farmers would have the ability to hire someone to do the marketing task, to share knowledge and innovations which would increase their social and human capital, but they would also minimise their marketing and infrastructural costs, by grouping their production. Moreover, retailers would cut their transportation costs, have a regular supply of fresh and local products and take part in the development of the rural economy at no extra cost. This may also help them in differentiating their marketing strategy function of the regions and countries by having shops with local produce and local colours. The cultural differences would be thus integrated in the business concept. Finally, the idea of grouping farmers would allow reducing the risks and hazards of agricultural production and ensure a more or less constant supply.

However, this concept raises two important issues: the first one being that this concept may be limited to the season of production in European countries. As we

have seen, there are some technical and biological solutions that would enable farmers to grow crops longer or to offer summer produce in winter. Nevertheless, if consumers want products they are used to in winter as well as in summer, retailers will continue to import them. Therefore, the solution lies in the education of consumers. Consumers must be educated to eat fresh and seasonal products as much as possible and to favour different types of products during winter, or the same products but canned. That is actually what people did before retailers appeared on the market and offered all types of products all year round from all over the world. Of course, it is not realistic to hope for a return to the consumption patterns of half a century ago. However, for environmental and health issues as well as for the success of local supply chains, a better understanding and respect of the concept of seasonality is required.

Secondly, this concept may be perceived as a risk and unfair competition for farmers in developing countries. However, the idea is only to try to redesign the system in a fairer way to ensure its sustainability. Such a concept would never be able to go against the globalisation and there would always be importations from developing countries. The actual food production system is based on a vicious cycle which consists of favouring the cheapest produce as possible, thus buying produce from developing countries, then subsidising farmers in European countries who cannot sell their production anymore, which then in turn deregulates the market and puts farmers in developing countries in jeopardy which have to lower their costs even more. Therefore, developing local markets may have a positive impact on this system by stopping the allocation of subsidies to European farmers, and restoring a fairer competition between rich and poor countries. In addition, the money used for subsidies could be used to help developing countries and to encourage them to produce subsistence food and produce for importations that are effectively needed in North countries, such as exotic produce and traditional produce that cannot be grown in winter. Thus, these types of crops would be more in adequacy with the local natural capital and farmers would be less dependent from the market.

8.6   Necessity of encouraging more responsible consumption to develop responsible production

As we have already seen in the previous part, consumers need to be educated to make the change possible, whatever the solution might be. Indeed, a change

towards more responsible production cannot succeed if consumers are not encouraged to consume more responsibly, as producers and retailers need a market to produce and offer responsible products. Both retailers and government have a role to play in this task and surprisingly retailers seem to recognise it.

The main issues that need to be targeted by education campaigns are the importance of eating seasonal for environmental as well as health issues, the benefits of quality food and why is it worth paying more for it, the necessity of supporting local producers and how nature basically works. Indeed, the trend during the last decades has always been for retailers to decrease the prices and for consumers to look for the best prices due to increase competition between retailers. This obviously has a limit but customers are not aware of it and cannot be since they do not know anymore how prices are built. Therefore, knowledge of the price needs to be reintroduced and consumers informed about why it is worth paying more for better quality food. Thus, alternative products and alternative supply chains will have sufficient business opportunities to develop themselves. However, this obviously has a limitation, in the sense that not every body can afford higher prices. Therefore, this education needs to come along with a government support for the poorest, to ensure that access to quality food is not reserved to the wealthiest part of the population, for example through public canteens (schools, hospitals etc.).

However, one may asked how this education can be done in practice. Retailers have already made huge progress by launching communication campaigns for better quality food, in particular through leaflets, magazines, in store communication, or websites. Likewise, governments have taken the issue on board and are developing communication campaigns through different types of media on the benefits of eating vegetables, cooking its own food etc. Therefore, consumers are generally more aware of the food issues than a decade ago. However, the communication is generally focused only on the benefits for consumers, in particular the health issues. This is easily understandable since the best way to reach and interest people is to talk about them. However, this type of communication might limit the extent of understanding of consumers. An example of other interesting axis of communication is the development of the 'Reflets de France' regional brand developed by Carrefour, which is aimed at encouraging the consumption of tasty and quality food, hence benefits for consumers, but also at developing consumers' awareness of the importance of supporting regional producers and defending local

cultures. These products actually have a huge success in France and are recognised by consumers as good for them as much as for the local producers. Nevertheless, they are not recognised as alternative but rather mainstream products. The brand has thus succeeded its communication by entering the market like a normal product and not like an alternative, and to make responsibility issues ordinary.

Two other strategies may also be effective in reaching and influencing consumers: financial and policy incentives. Indeed, as we have seen, consumers recognise that they could make some effort but that they need incentives for that, and that legislation can be a good one, for example in the case of waste sorting and recyclable bags. Adopting these changes has not been constraining for French consumers, but if they had not been compulsory, they would not have been adopted. Likewise, financial incentives have a huge influence on customers, for example by reducing the price of responsible products. Special offers on particular products might be good opportunities to make them discover by people who usually do not buy them, and to convince them that it is worth paying for, thanks to the differences in quality or taste with conventional products. However, it has been highlighted with Ian Bowles from ASDA that generally when the offer stops, no changes in the volume of sales are noticed. Therefore, these special offers might need to be associated with educating campaigns, such as the distribution of leaflets near the products to emphasise their differences with conventional products and the benefits consumers can reap of them. In addition, retailers should avoid doing special offers for selling off their stocks, as it may decrease the benefits of these offers due to lower quality produce.

However, the strategy of reducing the price of high-quality products to increase their access may not be a good solution. Indeed, in addition to be economically hardly viable, dropping the price of high-quality products may have an impact on the way customers perceive quality and finally reduce the take up of these produce, since quality is often associated with higher prices. In the particular case of French beans for instance, Kenyan produce are more expensive but are the most successful. The reduction of their price would only be harmful for the producers and retailers have already found marketing strategies to compensate their prices, even though not really laudable. Therefore, in this case, there is not any benefit in reducing the price.

Chapter 9 Conclusion

9.1 Summary of the research

This research dealt with the identification of the drivers of, and barriers to the creation and development of more sustainable food supply chains in order to suggest possible interventions at different levels. To meet the objectives, this thesis adopted the following approach. At first the issues of the dominant model of food production and consumption were reviewed to assess why there is a need for more sustainable alternatives. The literature was then analysed in order to understand under what conditions a food production system could be characterised as sustainable, and what are the driving forces behind the development of alternatives. It has been found that there are some common themes between the different theoretical and practical definitions, and these were used to create a generic framework as a checklist of the issues that must be taken into account in the analysis of different production and consumption patterns. A whole-system approach was followed, linking an adaptation of the 'Five Capitals' model developed by Forum for the Future, to the three main stages of the food supply chains: agricultural production, distribution, retail and marketing, and finally consumption.

The framework was then used to structure the method of the research as well as to prepare and analyse the different engagements. Three types of research have been conducted: a first stage has consisted of studying and analysing three different approaches to the production of French beans, a second stage has allowed to gain a deeper knowledge of how the retail business works and how it may be involved further in the development of sustainable alternatives, and finally a third stage has consisted of gaining a better understanding of how consumers perceive the different modes of production and what influences their consumption patterns. The particular case of French beans has been chosen as a common basis for the research.

Therefore, having this broad view of the ordinary food supply chain model, and having analysed different approaches to the sustainable production and consumption of French beans, it is now possible to identify the gaps for more sustainable food supply chains, and to suggest some interventions at different levels.

9.2 Discussion of the research process

The thesis had initially three objectives:

- To develop a qualitative, systemic framework for evaluating the sustainability of the food production and consumption patterns.
- To analyse different approaches to the production and consumption of French beans by pursuing a multi-technique methodology (documentary analysis, case studies, engagement with different types of stakeholders).
- To identify the drivers of and barriers to more sustainable food supply chains.
- To suggest how we might intervene at each stage of the supply chain to make it more sustainable.

The framework was created and proved very useful for conducting the interviews and building the questionnaires, but also for analysing the results and presenting the key recommendations. It helped structure the whole research. However, some problems were encountered throughout the research and required to change the strategy. The main issue has been the access to people in general. Indeed, the research was mainly conducted during July and August, when farmers were really busy and not necessarily keen to give some time for research, while the staff of the retailers were often on holiday. In addition, the difficulty was increased for retailers as they tend to separate their activities. Therefore, the research concerning sustainable development as well as marketing and purchase subjects, it was really difficult to access the right person to answer the questions. Moreover, the research being quite dense and divided between different countries, the organisation of the engagements needed to be carefully planned. Overlapping the three phases of the research was required to finish the research on time, and it was finally necessary to send some consumers' questionnaires by email, as face-to-face engagements were much too time-consuming.

Another important issue encountered during the research has been the necessity of triangulating the information as much as possible, particularly with retailers. The amount of questionnaires returned was very low, the researcher had thus to use background information from website and CSR reports. However, this type of information is not always reliable as it is part of the brands' marketing strategies. Therefore, it was fundamental for the validity of the research to try to amend and validate the information by engaging with people at different levels of the retail

business. Likewise, it was really important to check the affirmations of the consumers during the interviews by trying to cross the questions, even though it is difficult for a non-expert. For instance, every customer interviewed claimed to be concerned about the protection of the environment and being committed to do individual actions for it. Nevertheless, when trying to identify in more detail these actions, the responses were generally different.

9.3   Summary of the key findings and recommendations

Thanks to the analysis of the three stages of the research, it was possible to identify the drivers of and barriers to the take up of sustainable alternatives at the different stages of the supply chains (see table 9-1 below). They can be summarised as follows:

- Producers have now understood that there is a market and realise that they do not have the choice anymore for health and financial reasons. However, they need financial and technical support to change;

- Retailers are encouraged by their consumers, the appearance of new types of retailers and the successful examples of the leaders to make some efforts towards more sustainable food supply chains. However, their need to make money for their shareholders, and the way organisations and supply chains are organised make difficult the creation and development of sustainable alternatives;

- Consumers are concerned by health issues which are now at the core of the food debates. However, the practical issues that are price and convenience are still limiting their capacity to buy more responsible products. That is why they need to be educated and motivated.

	Drivers	Barriers
Production	• Do not have the choice anymore • Health and financial issues • Growing market	• Ability to change • Investment funding • Fragmentation of the industry • Retailers' requirements • Direction of subsidies
Distribution & Marketing	• Consumers • New types of retailers • Pressure groups	• Shareholders' accountability • Size of the organisations • Size of the supply chains • Lack of cooperation between the retailers
Consumption	• Concern for health issues • Growing food debate • Increased visibility of the • standards	• Price • Convenience • Lack of information • Lack of motivation

Table 9-1: Drivers of and barriers to more sustainable food supply chains

Four key aspects can be retained as essential in the development of more sustainable food supply chains:

- **Necessity of redesigning the supply chains:** the way supply chains work needs to be redesigned since slight improvements such as optimising the loading of trucks will never be enough to make the supply chains more sustainable. And the two following points are keys in the redesign of the food chains.

- **Sustainable solutions are location- and context- specific:** indeed, a successful model in a particular area of a particular country may not necessarily be appropriate in another area or another country. Each approach has its specificities, depending on the context in which it is developed. For instance, a successful model in Europe would certainly not be applicable in developing countries, and there may be a danger in trying to develop a unique alternative model for the global world. Therefore, sustainable food production systems need to be developed in the respect of the geographical, historical or cultural differences across the globe. A danger may be also to think after the analysis of the particular approaches in this thesis that the solution for more sustainable food production systems relies only in the past, and that finally 'modern agriculture' may be the old-fashioned way of farming. Therefore, sustainable alternatives need to be

context-specific and their development needs to involve trade-offs between the different dimensions of sustainability, and between innovations and knowledge from the past.

- **The development of cooperative approaches at all levels is necessary for the success of sustainable models**: indeed, sustainable supply chains require cooperative approaches at all levels. To overcome the increasing fragmentation of the industry and the farmers' isolation due to the decreasing viability of the business and the shrinkage of farmers, farmers need to regroup themselves and to share their successes and failures. Therefore, they will increase their social and human capital and be stronger in a context of global economy, by being able to market and diversify their production. Sustainable supply chains also require trust and durable cooperation between the different actors of the chain. This means between farmers and their clients, whether they be retailers or customers, but also between retailers and their suppliers along the supply chain.

- **Local and direct partnerships offer the highest sustainability potential**: indeed, local and direct partnerships appear as the best solution for farmers in Europe as well as in developing countries, and thus must be developed as much as possible. Local links enable producers to cut their transport and packaging costs, and thus to have a higher return of the price and reduce their environmental impacts on the most effective way. Then, direct links between producers and retailers or consumers enable to cut the intermediaries, and thus to increase farmers' income and to suppress the externalities. However in practice, the local and direct links such as those that have been studied through the research are very limited. Therefore, different types of local and direct partnerships must be built, in particular with retailers. For instance, the development of partnerships between groups of local farmers and the convenience stores developed by the food retailers may be an interesting solution and may seriously increase the sustainability of the food chain. Competitive, fresh and quality products could be offered in a sustainable way by retailers at a competitive price and with no extra cost for them, and this solution would add the long-term economic viability of the stores to the sustainable benefits of the local schemes.

Additional details of the benefits of these aspects are given in table 9-2. However, some challenges need to be addressed to ensure the success of sustainable alternatives, and mainly the education and motivation of consumers. Both retailers

and governments have a role to play in it through advertising and marketing campaigns or even legislation. There do not seem to be any miraculous solutions to improve the respect for the environment along the supply chain. However, redesigning supply chains as has been presented previously may have a significant impact on the natural capital by ensuring minimum standards of quality at all levels. Then, certification standards need to be reinforced and simplified to increase their influence, and government may probably also have a role to play in it. Standards may not be necessary in the development of more sustainable supply chains, but can certainly be very useful by increasing awareness and being a guarantee of quality. That is why they surely need to be reinforced and marketed to have more impact on customers and be more visible. They also need to be simplified, in core and in amount.

Every actor along the supply chain has a role to play in the development of more sustainable alternatives, but in particular farmers, retailers and governments can have an influence along the food chain (some suggestions of interventions at these three levels are presented table 9-3). Their degree of commitment will probably make the difference.

9.4   Suggestions for further research

General concepts have been suggested in this thesis to make the food supply chains more sustainable. However, there still are opportunities to improve the understanding of the issues involved in their creation and development, and in particular it would be interesting to go more into detail about the three following points:

- How the relationships within the food supply chains can be modified;
- How responsible consumption can drive further responsible production;
- What type of incentives must be developed to encourage more sustainable behaviours and how they must be structured.

	Description	Environmental friendliness	Social alignment	Enhancement of human capital	Physical adequacy	Economic viability
Cooperative approach	Between farmers	• Higher quality standards	• Increased social capital	• Sharing of successes, failures and innovations	• Sharing and improvement of the infrastructures	• One person in charge of the marketing task helps gain contracts • Sharing of the costs
	Between farmers and retailers	• Spreading of the best practices • Agreement on minimum quality standards	• Trustful and durable relationships	• Spreading of the best practices • Development of new technologies or processes	• Sharing and improvement of the infrastructures	• Fairer relationship leading to stable prices on the long-term
	Between retailers and their suppliers	• Spreading of the best practices • Development of quality standards	• Trustful and durable relationships	• Transmission of know-how • Development of new technologies or processes	• Sharing and improvement of the infrastructures	• Fairer relationship leading to stable prices on the long-term
Local links	Reduction of transport and packaging	• More transparency, hence higher quality	• Increased proximity between farmers and consumers • Revitalisation of the local community	• Protection of the local cultures • Rediscovery of local species	• Development or reuse of local infrastructures	• Higher return on the price
Direct links	Suppression of the intermediaries	• Less transport, less packaging, less chilled chain • More transparency, hence higher quality	• Increased proximity between farmers and consumers	• Valuation of the farming activity • Personal development		• Higher return on the price

Table 9-2: Sustainable benefits of cooperative approaches, local and direct links

	Farmers	Retailers	Governments
Production	• Increasing the grouping of farmers to be stronger in the market and be able to offer a wide range of products • Finding new products or technologies to avoid importations	• Building partnerships with groups of local farmers • Favouring products from developing countries only when they are not available locally	• Technical and financial support for the certification process • Moving subsidies from local farmers to developing countries to encourage their development
Distribution Marketing Processing	• Cutting the intermediaries • Building direct partnerships with local retailers	• Cooperative approach with food manufacturers and other suppliers to spread best practices and encourage the development of more responsible products • Communicating with their staff to ensure general commitment and successful application of the strategies • Developing further the strategies for protecting the environment, with actions such as compost-able packaging, shipping instead of flying, biofuels etc.	• Developing financial incentives for responsible businesses • Stopping subsidising importations
Consumption	• Increasing transparency and communication with customers • Taking part in the development of a food culture in the UK	• Financial incentives to buy more responsible and quality products • Education to the importance and benefits of responsible products • Education to the importance of eating seasonal food	• Educating about the importance and benefits of quality and seasonal food • Developing a food culture in the UK • Informing about labels • Increasing access to quality food, for example through public canteens (schools, hospitals etc.)
Policy and support mechanisms		• Helping harmonise the support mechanisms landscape, for example by extending the take up of EurepGap among European retailers • Giving more visibility to other labels	• Giving labels more visibility • Giving labels financial support to decrease certification fees

Table 9-3: Framework of actions for more sustainable alternatives

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APPENDICES

APPENDIX 1: Categories of policy instruments available to encourage more sustainable food systems (Pretty, 1997)

	Principle	Advantage	Disadvantage
Advisory and institutional measures	Rely on voluntary actions of farmers. Aimed at increasing social capital and the uptake of best practices	Internalisation of costs. Cheap and adaptable.	-
Regulatory and legal measures	E.g. emissions or quality standards. Exceeding these standards lead to penalties.	Internalisation of costs. Enable the elimination of certain practices and the legal protection of habitats or species at national or international levels.	Controlling compliance on every farm is impossible.
Economic instruments	'Provider gets' (to reward good behaviour) and 'Polluter pays', with instruments such as environmental taxes and charges, subsidies and incentives.	-	Externalisation of costs. Taxes are sometimes seen as restraining economic growth. Rarely applied in agriculture.

**APPENDIX 2: Comparison of different models of distribution and marketing of vegetables
(Adapted from the Soil Association, 2001 and Alliance PEC)**

Criteria	Selling point in the farm	Farmers' markets	Collective shop	Box schemes
Price	Fixed to cover production costs. Same price as in retailers due to fewer intermediaries.	Idem.	Idem. The shop deducts a percentage of the turnover (between 8 and 12%) to maintain the shop working.	Fixed conjointly by the producer and the consumers, to cover the production costs, ensure a decent income to the producer and stay accessible to the consumers.
Diversity, Quantity and time to buy produce	Free choice of opening times (limited in low season). Choice limited by the farm production. Tasting and farm visits are possible.	Usually sold in mornings. A producer can sell on several markets.	Great variety of products. Shops are opened all day long.	Consumers can choose with the producer at the start of the season the vegetables they want to eat.
Quality of the product	Same regulations as for retailers, but products have more taste due to traditional methods of production, are fresher and harvested mature.	Idem.	Idem.	Idem. Often organic production; the producer has more time and less constraints to spend more time to choose the best species; no packaging.
Market security	Loyalty can be developed with a part of the clientele	Idem.	Fixed outlet. Success depends on the harmony between producers and quality of life in the group.	Products may be bought in advance (6 months). Everything produced is sold. No marketing costs.
Constraints for the producer	The farmer produces, transforms and markets himself his produce.	Idem.	Idem.	Management of a diversified production (more than 15 different vegetables), and homogeneous repartition on the whole season.
Constraints for selling	To be present.	Idem.	Producers sell successively. The locale protects from rain and temperature.	Consumers are in charge of the distribution, the role of the producer is only to communicate with the customers.
Social and environmental added value	Direct link between producer and consumers. Producers target sustainable production.	Idem. Loyalty can also be developed with a part of the clientele	Contact between producers and consumers. Collective management by the producers.	Producers and consumer meet and discuss at each distribution. Consumers can thus act on the practices of the producer and management of the land.

APPENDIX 3: Generic framework

Environmental friendliness

	Collective attributes	Individual sub-attributes (measures)
Production	**Land usage**	Footprint of technology used
	Bio-diversity	Protection of wildlife habitats; no use of chemicals; adequate type of seed
	Greenhouse gas emissions	Renewable energy; carbon sequestration in soils
	Resource conservation	Minimisation of non-renewable inputs (fossil fuel etc.); waste minimisation; recycling; energy and water efficiency
	Flood protection	Flood vulnerable area protected; storm protection
	Landscape quality	Local community and tourists satisfaction
	Soil quality	Adequacy crop / climate / soil; integration of natural processes within the food production process (nutrient cycling, nitrogen fixation, soil regeneration etc.): use of organic fertilisers; natural pest control; intercropping; animals interaction
	Water quality	Availability and temporal distribution; no use of chemicals, proper water management (waste treatment and recycling, water storage, water usage)
Distribution Preparation Marketing	**Land usage**	Footprint of technology used; distance travelled
	Bio-diversity	Use of existing infrastructure; distance travelled
	Greenhouse gas emissions	Renewable energy; energy efficiency; sustainable transportation systems; no use of chemicals (preservative, cooling products etc.); distance travelled
	Resource conservation	Minimisation of non-renewable inputs (type of materials used, recyclability, eco-efficiency, type of energy used etc.); energy efficiency; distance travelled
	Flood protection	Use of existing infrastructure; integration infrastructure / natural environment
	Landscape quality	Use of existing infrastructure; integration infrastructure / natural environment
	Waste	Nature of by-products (hazardous etc.); recycling; incorporation of closed-loop processes
	Water	Proper water management (waste treatment and recycling, water storage, water usage)
Consumption	**Land usage**	Footprint of the technology to buy, store, prepare and eat the food
	Bio-diversity	Variety of food eaten
	Greenhouse gas emissions	Sustainable transportation system to buy the food; refrigeration; renewable energy to cook; energy efficiency; respect of the food seasonality
	Resource conservation	Minimisation of non-renewable inputs (fossil fuel etc.); recycling; waste minimisation; energy and water efficiency; respect of the food seasonality
	Waste	Minimisation of non-organic waste; waste sorting separation; composting

Social alignment

	Collective attributes	Individual sub-attributes (measures)
Production	**Development and deprivation (community well-being)**	Participatory management (improved levels of participation, stakeholder engagement etc.); development of public goods (schools, organisational networks etc.)
	Trust and information about the other stages of the supply chain	Knowledge and trust of the farmers regarding how and where their product will be processed, distributed and consumed
	Interaction	Collective or individual work; number of resources, knowledge, workforce etc. shared; opportunity to interact with other people during the work
	Employment opportunities	Number of jobs created or saved
	Farmers satisfaction	Number of farmers willing to leave and those willing to join
	History	Continuity of community links to buildings, landscape, organisational networks or associations etc.
	Health and Safety risks	Number of potential or true risks for farmers and wider community
Distribution Preparation Marketing	**Development and deprivation (community well-being)**	Participatory management (improved levels of participation, stakeholder engagement etc.); development of public goods inside and outside the organisation (schools, organisational networks etc.)
	Trust and information about the other stages of the supply chain	Knowledge and trust of how the product has been produced, distributed, its quality and its future
	Interaction	Opportunity to interact with other people during the work (farmers' markets, internet, supermarkets have different degree of relationship between seller and consumer)
	Employment opportunities	Number of jobs created or saved
	Workers satisfaction	Number of workers willing to leave and those willing to join
	Health and Safety risks	Number of potential or true risks for workers and wider community
	Respect of the other stages of the supply chain	Fair trade e.g. supermarkets not pressuring farmers
Consumption	**Consumer satisfaction**	Rate of loyal customers
	Development and deprivation (community well-being)	Consequences on the family's or community's life (food to eat alone, in family etc. comes from the nature of the product and the way it is processed and packaged)
	Trust and information about the other stages of the supply chain	Knowledge and trust of how the product has been produced, distributed and its quality
	Interaction	Opportunity to interact with the seller of the food
	Health and Safety risks	Number of potential or true risks for consumers eating the food

Enhancement of human capital

	Collective attributes	Individual sub-attributes (measures)
Production	**Farmers knowledge and skills**	Use and respect of local workforce and community skills; level and type of education of farmers; level of pluriactivity; ability of people to interact with technologies and people
	Knowledge transfer and innovation	Training courses and formation at different levels; development of personal skills; technology ratio on farm; availability of reference information; availability of local support persons
	Employment	Employment creation and protection
	Management of problems	Participatory management; use of all skills to manage the problems, from traditional skills to new technologies
	Indepedence and self-reliance	Adaptability to local needs (food for living, not only selling eg luxury crops); type of seed (not terminator etc.); type of land ownership; size of farms
	Culture	Respect of local culture associated with labour methods, type of food produced, way of living, landscapes etc.
Distribution Preparation Marketing	**Workers skills and knowledge**	Use and respect of every worker's skills; level of pluriactivity; level and type of education of farmers; ability of people to interact with technologies and people
	Knowledge transfer and innovation	Training courses and formation at different levels; development of personal skills; technology ratio; availability of reference information; availability of support persons
	Employment	Employment creation and protection
	Management of problems	Participatory management; use of all skills to manage the problems, from traditional skills to new technologies
Consumption	**Consumers skills and knowledge**	Knowledge of food origin, and other aspects of its production, distribution, processing and packaging
	Knowledge transfer and innovation	Education regarding the cultural aspects of food (variety, seasonality etc.) and the way it is now produced, distributed, processed and packaged in general
	Indepedence and self-reliance	Affordability, readiness
	Culture	Food not depleting local culture (type of food, season, taste due to processing and packaging, way of cooking it etc.)

Physical adequacy

	Collective attributes	Individual sub-attributes (measures)
Production	**Buildings**	Preservation, adaptation and restoration, new 'green' buildings
	Energy systems	Performance / efficiency; reliability; durability; flexibility; respect for the other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Irrigation systems	Performance / efficiency; adaptability; reliability; durability; adequacy with other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Waste treatment and disposal	Security; clarity; reliability; adaptability; durability; adequacy with other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Agricultural technologies	Performance / efficiency; adaptability; reliability; durability; flexibility; respect for the other capitals; portability; time scale for and ease of set-up; ease of use; maintenance requirement
	Management of chemicals	Security; clarity; reliability; ease of use; durability; respect for the other capitals; maintenance requirement
Distribution Preparation Marketing	**Transportation systems**	Using renewable energy; performance / efficiency; adaptability; reliability; durability; flexibility; adequacy with other capitals; maintenance requirement
	Storage of fossil fuels	Security; clarity; reliability; ease of use; durability; respect for the other capitals; maintenance requirement
	Buildings	Preservation, adaptation and restoration, 'green' new buildings
	Energy systems	Performance / efficiency; reliability; durability; flexibility; respect for the other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Communication	Use of two-way communication with the customer (discussions, feedbacks, not only advertising)
	Water systems (usage, treatment, recycling)	Performance / efficiency; reliability; durability; flexibility; respect for the other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Waste treatment and disposal	Security; clarity; reliability; adaptability; durability; adequacy with other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Storage of chemicals	Security; clarity; reliability; ease of use; durability; adequacy with other capitals; maintenance requirement
Consumption	**Energy systems**	Performance / efficiency; reliability; durability; flexibility; respect for the other capitals; time scale for and ease of set-up; ease of use; maintenance requirement
	Waste treatment and disposal	Security; clarity; reliability; adaptability; durability; adequacy with other capitals; maintenance requirement

Economic viability

	Collective attributes	Individual sub-attributes (measures)
Production	**Investment funding**	Capital investment on project (acquisition of methods; technologies; site preparation etc.)
	Viability	Return on investment regular and sufficient; delays in payment
	Commercial viability	Availability of market; presence of competing projects; business risks factors associated with take up
	Subsidies / grants	Perverse or beneficial; impacts on local communities
	Operating costs	Salaries; wages; equipment maintenance; training; repairs etc.
	Value of product	Money generated
	Quality of product	Consumer satisfaction
	Availability of raw materials	Rainfall; sun; other water access; security of supply in seeds etc.
	Level of dependence upon technology	Risks associated with problems with water irrigation systems, machineries etc.
	Crop vulnerability	Vulnerability and existence of pests and diseases; sensitivtity to salt and frost
Distribution Preparation Marketing	**Investment funding**	Capital investment on project (acquisition of materials; technologies etc.)
	Operating costs	Salaries; wages; equipment maintenance; training; repairs etc.
	Viability	Return on investment
	Commercial viability	Availability of market; presence of competing projects; business risks factors associated with take up
	Compliance costs	Depollution, compliance to legislation, audits etc.
	Level of dependence upon raw materials	Energy supply, oil security etc.
	Subsidies / grants	Perverse or beneficial
	Value of product	Money generated
	Quality of product	Consumer satisfaction
Consumption	**Food security**	Affordability
	Fair price	Externalities taken into account
	Value (and quality) of product	Benefits generated for the consumer (health, etc.)
	'Operating' costs	Additional costs to buy, store and prepare the food

Policy and support mechanisms acceptability

	Collective attributes	Individual sub-attributes (measures)
Production	**Integrated approach**	Respect of the different dimensions of sustainability; application of a range of different policy instruments; acknowldegment of the other stages of the chain
	Direction of the policy	Inducing (control and command regulation) or modulating (systemic approach)
	Adequate criteria	Relevance for the project; realism and ease of criteria application
	Flexibility	Possible variation in the implementation process regarding the capacity and commitment of the regulated actor
	Comprehensive accreditation process (if necessary)	Involvement and knowledge of the person in charge of the accreditation; limited cost; limited paperwork
	Support	Communication networks (training, accessibility and quality of information, availability of support persons)
	Adequacy with other policy requirements	No contradictory aspect or requirement with national legislation, or other policies/support mechanisms
	Returned benefits for farmers	Quality of production; resource optimisation; number of clients; price
Distribution Preparation Marketing	**Integrated approach**	Respect of the different dimensions of sustainability; application of a range of different policy instruments; acknowldegment of the other stages of the chain
	Direction of the policy	Inducing (control and command regulation) or modulating (systemic approach)
	Adequate criteria	Relevance for the project; realism and ease of criteria application
	Flexibility	Possible variation in the implementation process regarding the capacity and commitment of the regulated actor
	Comprehensive accreditation process (if necessary)	Involvement and knowledge of the person in charge of the accreditation; limited cost; limited paperwork
	Support	Availability and quality of relevant information; availability of support persons
	Returned benefits	Reduction of costs; reduction of risks; increased product quality; increased employee satisfaction; benefits for the other stages of the production chain
	Adequacy with other policy requirements	No contradictory aspect or requirement with national legislation, or other policies/support mechanisms
Consumption	**Influence on customers' choice**	Better knowledge of the product; trust in the support mechanism (positive connotation)
	Returned benefits for the customers	Better food quality (healthy, more nutrients, etc.); incitation to do something good; changes in the global consumption pattern

APPENDIX 4: Structure of the GRI guidelines (www.globalreporting.org)

	CATEGORY	ASPECT
ECONOMIC	**Direct Economic Impacts**	Customers Suppliers Employees Providers of capital Public sector
ENVIRONMENTAL	**Environmental**	Materials Energy Water Biodiversity Emissions, effluents, and waste Suppliers Products and services Compliance Transport Overall
SOCIAL	**Labour Practices and Decent Work**	Employment Labour/management relations Health and safety Training and education Diversity and opportunity
	Human Rights	Strategy and management Non-discrimination Freedom of association and collective bargaining Child labour Forced and compulsory labour Disciplinary practices Security practices Indigenous rights
	Society	Community Bribery and corruption Political contributions Competition and pricing
	Product Responsibility	Customer health and safety Products and services Advertising Respect for privacy

APPENDIX 5: Checklist for engagement with producers

1. The project and its motivation

a. General definition of the production model
b. Reasons behind the choice of this particular production model
c. Desire to change the model, to produce differently? Reasons
d. Types of crops produced (Independence and self-reliance)
e. Reasons behind the production of French beans? (for eating/selling etc.)
f. Frequency of producing French beans (seasonal, twice a year etc.)

2. Methods of production / Technologies

a. Degree of technology employed, general principle
b. Machinery / traditional methods and techniques
c. Chemicals / natural processes
d. Irrigation
e. Monoculture / large fields
f. Type of seed grown and reasons (mainstream, local species, GM, etc.)
g. Waste management
h. Any special efforts for renewable energies or more efficiency
i. Barriers / drivers for more sustainable methods and technologies

3. Distribution / marketing

a. Stages in the supply chain, number of intermediaries
b. How distribution and marketing work, responsibilities
c. Where the French beans are sold
d. Way of selling the French beans (canned, fresh etc.) and reason
e. Price
f. Degree of interaction with the intermediaries
g. Has another model been tried and why (e.g. reduction of distance between places where it is produced and where it is sold, more sustainable transportation system, or less intermediaries)

→ Ask for other contacts if necessary to have more information about the other stages

4. Management / employees

a. Number and level of employees, how long they stay, possible issues in recruiting
b. General organisation of the farm and work
c. Formation of employees (adaptation to new technologies) / transmission of knowledge
d. Labour and living conditions of the employees
e. Management of problems
f. Integration of local culture
g. Interaction with associations of farmers or others
h. Conditions of employment creation and protection
i. Number of jobs created or saved during the last couple of years
j. Health & Safety policy, Quality Management, others
k. Barriers / drivers for a more sustainable management

→ When possible, interview farmers to know their point of view and degree of satisfaction

5. **Local community**

a. Acceptability of farming by local community
b. Links with local community
c. Perceived impacts of the project on local community

6. **Customers**

a. Type of consumers (to measure their knowledge of the customers)
b. Perceived reasons of why customers may choose this type of product
c. Loyalty?
d. Believed benefits for the consumers (ranking)
e. Link between producer and consumer
f. What sort of knowledge of the product the customers have
g. Role of the producer (are the producers doing something for increasing the knowledge and awareness of the consumer?)

7. **Financial aspects**

a. Capital investment on project
b. Return on investment / growth of the market;
c. Commercial viability: delays in payment; availability of market; presence of competing projects; business risks factors associated with take up
d. Operating costs
e. Subsidies / grants: their effects
f. Money generated from the sale of the product? (money by product and total sales)
g. Fairness of the price
h. Risks with raw materials (seed, water, sun etc.), crop vulnerability, technology

8. **Policy and support mechanisms**

a. Type, role, flexibility, support and usefulness of the policies they have to comply with
b. Choice or intention to choose a certification label or another standard, and reason
c. Perceived benefits of these labels for the different types of stakeholders
d. Any support from the government?
e. Importance of government support for the producer? (Barrier or driver?)

APPENDIX 6: Checklist for engagement with the French producer

1. **Le project et la motivation**

   a. Résumé du modèle de production dans les grandes lignes
   b. Comment en êtes vous arrives à faire ça ? Travailliez-vous différemment avant ? Quelle est votre motivation à faire ça ? Depuis combien de temps le faîtes vous ?
   c. Quel type de récoltes faites-vous ? (résistance, vulnérabilité) Est-ce uniquement pour la vente ? Quelle période de l'année ?
   d. Vendez-vous des haricots? Pourquoi?

2. **Methods of production / Technologies**

   a. Concernant le bio, comment êtes vous certifié? Par qui ? Pourquoi ? Quels sont les bénéfices ? Avez-vous des standards ou des consignes à respecter ? Lesquels ? Généraux ou propres aux légumes ?
   b. Degré de technologie employée
   c. Combien de surfaces?
   d. Quelles méthodes et techniques employez-vous? (intercropping etc.)
   e. Quels produits chimiques?
   f. Quel type d'irrigation?
   g. Elevez-vous aussi des animaux ? Pourquoi ?
   h. Comment choisissez-vous les espèces à produire? (mainstream, local species) Quel est votre avis sur les OGM?
   i. Management des déchets?
   j. Faites vous des efforts particuliers pour utiliser des énergies renouvelables ou économiser l'énergie ?
   k. Any barriers / drivers for the use of more sustainable methods and technologies?

3. **Distribution / marketing**

   a. Vendez-vous autrement que par panier ? (ex Biocoop) Quel pourcentage ?
   b. Pourquoi avoir choisi ce modèle de vente ?
   c. Par panier, combien de légumes mettez-vous et comment construisez-vous le prix ?
   d. Combien avez-vous de clients ? Quel est votre objectif ?
   e. Comment trouvez-vous vos clients ?
   f. Avez-vous des aides pour cela ?
   g. Avez-vous d'autres moyens de faire de la pub, par ex journées développement durable, ou quinzaine dans les supermarchés ?

4. **Management / employees**

   a. Quel est le rôle de l'AMAP exactement ?
   b. Les structures de production de l'AMAP sont-elles toutes identiques? Peut-il y avoir des projets de plus grande envergure ?
   c. Avez-vous des employées, combien, description, combien de temps restent-ils ? est-ce difficile de recruter?

d. Comment se passé la transmission des connaissances? Avez-vous des formations de l'AMAP ? Est-ce juste entre producteurs ?
e. Que leur apprenez-vous exactement? (technique, management ?)
f. Êtes-vous heureux de ce que vous faites ?
g. Êtes-vous en contact ou membre d'autres associations ?
h. Problèmes particuliers dans le management ?

5. Local community

a. Quels sont vos liens avec la communauté locale ?
b. Quels sont vos liens avec la ville, les élus ? La région ?
c. Que pensez-vous que sont vos impacts sur la vie de la communauté ?
d. Faites vous d'autres actions, par exemple aux fêtes locales ?

6. Customers

a. Quel est le type de clients que vous avez ? D'où viennent-ils ?
b. Savez-vous pourquoi ils achètent de cette façon ?
c. Est-ce qu'ils sont loyaux ?
d. Que pensez-vous que sont les bénéfices pour vos clients ? (ranking)
e. Êtes-vous beaucoup en contact avec eux ? Occasions particulières?
f. Est-ce qu'ils ont connaissance de votre manière des travailler etc. ? Faites vous quelque chose pour ça ?

7. Financial aspects

a. Quel est votre salaire ?
b. D'où venait le capital de départ pour le projet ? De combien est-il ? Quelles aides ?
c. Le revenu des paniers est-il suffisant ? Quelle est la marge bénéficiaire sur un panier ? Êtes-vous stable maintenant ? par ex en hiver comment faites-vous ?
d. Pouvez-vous envisager une croissance? Comment ?
e. Quels sont les risques au départ ? Attitude des banques ?
f. Quelle compétition ?
g. Operating costs
h. Avez-vous des subventions ? Qu'en pensez-vous ?

8. Policy and support mechanisms

a. Type, rôle, flexibilité, support et utilité des régulations auxquelles vous devez vous conformer ?
b. Recevez-vous des subventions du gouvernement? Ou d'autres aides ?
c. Que pensez-vous que doit être le rôle du gouvernement auprès de l'agriculture ? (Barrière ou accélérateur?)

APPENDIX 7: Questionnaire for UK retailers

<u>**GENERAL QUESTIONS ABOUT THE PURCHASING PRACTICES**</u>

1. How do you organise the purchasing process?

Who / which service is in charge of the purchase in your Group?

What are the differences between the brands of the Group?

Additional information –

2. Do you have general policies or principles regarding the purchase of vegetables (e.g. quality standards etc.)?

Do you impose any quality, ethical or other requirement to producers? *(e.g. quality management, good labour conditions or standards like EurepGap)*

Any differences regarding the type of producer?

Additional information –

3. Do you take into consideration the needs and wants of the consumer before purchasing new types of vegetables (e.g. by doing customers surveys)?

Please explain your answer

Any differences according to the type of product?

4. Do you take environmental aspects into consideration in the choice of vegetables to retail?

If yes:

Please explain your answer

Which aspects in particular?

Do you try to mitigate the impacts of the products you purchase? *Please give examples e.g. by choosing more environmentally-friendly transportation system when you choose non-local products*

If no:

Please explain your answer

5. Do you take ethical aspects into consideration in the choice of vegetables to retail?

If yes:

Which aspects in particular? *Please give examples*

Please explain why

If no:

Please explain why

6. Do you sometimes buy locally grown vegetables?

If yes:

Please explain why

If you have the choice, do you favour locally grown vegetables?

If no:

Please explain why

7. Do you sometimes buy vegetables directly from producers?

If yes:

Please explain why and what are the issues / benefits

Pleas precise, if possible, the proportion of vegetables bought directly from producers?

If no:

Please explain why

8. Do you sometimes choose vegetables certified by labels (like organics or fair-trade)?

If yes:

Which labels?

Which vegetables?

Please explain why

What are the benefits for you?

If no:

Please explain why

REASONING BEHIND THE PURCHASE OF FRENCH BEANS

9. Do you retail French beans?

If yes:

Please explain why

What type of French beans? (*Please complete the table below*)

Characteristics / Type	Variety	Origin	Type of producer	Label	Preparation (fresh, cooked etc.)	Brand of your Group
1						
2						
3						

Does your offer change with the seasonality?

If no:

Please explain why

10. What do you think is the trend at this time in the consumption of French beans?

Have you noticed any recent changes in the consumption pattern of French beans (any increase, decrease etc.)?

How do you think customers prefer French beans (fresh, canned, ready to cook, any particular origin etc.)?

Additional information –

11. What criteria are the most important for you in the choice of French beans that you retail?

Please choose, complete if necessary, and rank from 1 to 3 the main criteria in the list below.

Criteria	Brand 1:	Brand 2:	Brand 3:	Brand 4:
Quality				
Origin				
Type of production				
Price				
Distance travelled				
Type of seed				
Aspect				
Other:				

Please explain your answer

Additional information –

12. What are the other beans competing with the French beans?

Please list them and precise the differences with the French beans (price, quality, taste etc.)

Do you favour the purchase of one of these products (French beans or competitors)?

Please explain why:

Do you have some figures of the sales of French beans and their competitive products in your shop(s)?

Additional information –

ABOUT THE MARKETING OF FRENCH BEANS

13. Could you describe the process and the logistics through which the French beans you retail have to pass before being sold?

What are the different stages? *(if possible, precise the duration of each stage, the responsibilities, the conditions of storage, the cost etc.)*

How are they transported? *(if possible, precise the number of air-miles)*

Additional information –

14. Are you aware of some policies and legislation (internal and external) that have to be taken into account in these stages (e.g. environmental management etc)?

Internal	*External*

15. How do you apply the sustainability principles to the marketing of French beans?

Do you take environmental aspects into consideration when marketing French beans?
Please give examples e.g. less packaging

Do you take social aspects into consideration when marketing French beans? *Please give examples regarding employees and / or customers*

16. How do you market the French beans?

Regarding advertisement or price reduction?

Regarding the location on the shelf?

Any differences with the competitors of the French beans?

Additional information –

17. Among the different types of French beans you sell, do you favour any particular type (e.g. Fairtrade French beans during Fairtrade fortnight or any other particular price reduction)?

Which type?

How do you favour them?

Please explain the reason:

Additional information –

18. Thank you for your time, would you like to receive a feedback of my findings?

APPENDIX 8 : Questionnaire for French retailers

QUESTIONS CONCERNANT VOS PRATIQUES D'ACHAT EN GENERAL
1. Comment est organisé votre processus d'achat?
Qui / quel service est responsable de l'achat des légumes dans votre groupe ? Y a-t-il des différences entre les enseignes du groupe ? *Quelles sont-elles ?*   Informations complémentaires –
2. Avez vous certains principes ou certaines règles concernant l'achat des légumes (tels que standards de qualité etc.)?
Imposez-vous des critères de qualité, d'éthique ou autre aux producteurs? *(Pouvez-vous préciser par exemple, management de la qualité, conditions de travail des employés ou standards tels que EurepGap)* Ces critères sont-ils différents selon le type de of producteur?   Informations complémentaires –
3. Prenez-vous en compte les besoins et désirs des consommateurs avant de décider de l'achat d'un nouveau légume (en faisant une étude de marché par exemple)?
Pouvez-vous expliquer votre réponse   Cette démarche est-elle différente selon le type de produit?
4. Prenez-vous en compte les aspects environnementaux lors du choix des légumes à acheter?
Si oui: Pouvez-vous expliquer votre réponse Quels aspects en particulier? Essayez-vous parfois d'atténuer les impacts des produits que vous achetez? *Pouvez-vous citer quelques exemples, par exemple en choisissant des moyens de transports plus respectueux de l'environnement si votre choix s'est porté sur des légumes produits à longue distance* **Si non:** Pouvez-vous expliquer votre réponse

5. Prenez-vous en compte les aspects éthiques lors du choix des légumes à acheter?

Si oui:

Quels aspects en particulier? *Pouvez-vous citer quelques exemples*

Pouvez-vous expliquer pour quelle(s) raison(s)

Si non:

Pouvez-vous expliquer pour quelle(s) raison(s)

6. Achetez-vous parfois des légumes produits localement ?

Si oui:

Pouvez-vous expliquer pour quelle raison

Si le choix s'offre à vous, privilégiez-vous les légumes produits localement ?

Si non:

Pouvez-vous expliquer pour quelle raison

7. Vous arrive-t-il d'acheter des légumes directement aux producteurs ?

Si oui:

Pouvez-vous expliquer pour quelle raison et quels en sont les avantages / inconvénients ?

Pouvez-vous si possible préciser la proportion des achats de ce type sur le total des achats de légumes ?

Si non:

Pouvez-vous expliquer pour quelle raison

8. Vous arrive-t-il d'acheter des légumes labellisés (tels 'bio' ou 'commerce équitable) ?

Si oui:

Quels labels?

Quel type de légumes ?

Pouvez-vous expliquer pour quelle raison

Quels bénéfices en retirez-vous ?

Si non:

Pouvez-vous expliquer pour quelle raison

QUESTIONS CONCERNANT L'ACHAT DES HARICOTS

9. Proposez-vous des haricots à vos clients ?

Si oui:

Pouvez-vous expliquer pour quelle raison

Quel type de haricots ? (*Complétez le tableau ci-dessous)*

Caractéristiques / Type	Variété	Origine	Type de production	Label	Preparation (frais, cuisinés)	Enseigne du Groupe
1						
2						
3						

L'offre varie-t-elle avec les saisons ?

Si non:

Pouvez-vous expliquer pour quelle raison

10. Y a-t-il actuellement une tendance particulière dans le mode de consommation des haricots?

Avez-vous remarqué des changements récents dans la manière de consommer ces haricots (augmentation, diminution etc.) ?

Quel type de haricots sont actuellement préférés (frais, secs, cuisinés, d'une provenance particulière etc.)?

Informations complémentaires –

11. Quels sont les critères qui rentrent en compte lors de l'achat des haricots pour les magasins du groupe?

Pouvez-vous choisir, compléter si nécessaire, et classer de 1 à 3 les critères les plus importants dans la liste ci-dessous

Critères	Enseigne 1:	Enseigne 2:	Enseigne 3:	Enseigne 4:
Qualité				
Origine				
Type de production				
Prix				
Distance à parcourir				
Espèce				
Aspect				
Autre :				

Pouvez-vous expliquer votre réponse

Informations complémentaires –

QUESTIONS CONCERNANT L'APPLICATION DES PRINCIPES DE DEVELOPPEMENT DURABLE DANS L'ENTREPRISE

12. Pourriez-vous décrire le processus et les aspects logistiques par lesquels les haricots doivent passer avant d'être vendus dans vos magasins ?

Quelles sont les différentes étapes ? *(si possible, précisez la durée de chaque étape, les responsabilités, les* conditions de *stockage, le coût etc.)*

Comment sont-ils transportés ? *(si possible, précisez le nombre de kilomètres parcourus et le coût)*

Informations complémentaires –

13. Savez-vous quelles règles ou législations (internes et externes) doivent être appliquées durant ces différentes étapes (par exemple, management environnemental etc.) ?

Interne	*Externe*

14. Recevez vous des conseils ou des consignes pour l'achat des légumes en rapport avec la politique de développement durable de l'entreprise ?

Pouvez-vous expliquer votre réponse

Informations complémentaires –

15. Comment ressentez-vous la politique de développement durable dans votre travail ?

Pensez-vous qu'elle soit réellement efficace ?
En voyez-vous les bénéfices ? *Pouvez-vous me donner des exemples*

Vous sentez-vous concerné(e) par les efforts du Groupe Casino pour l'environnement ?

Informations complémentaires –

16. Comment appliquez-vous les principes de développement durable aux phases de marketing et de vente des haricots ?

Tenez-vous compte des aspects environnementaux lors de ces phases ? *Pouvez-vous donner quelques exemples (par exemple réduction de l'emballage)*

Prenez-vous en compte les aspects sociaux lors de ces phases ? *Pouvez-vous donner quelques exemples concernant les employés et / ou les clients*

Informations complémentaires –

17. Parmi les différents types de haricots que vous vendez, privilégiez-vous parfois certains d'entre eux (tels que des haricots produits équitablement lors d'une semaine spéciale 'commerce équitable' ou d'éventuelles réductions du prix) ?

Quel produit ? *Pourriez-vous indiquer le numéro correspondant dans la table question 9*

De quelle manière ?

Pouvez-vous en expliquer la raison:

Information complémentaire –

18. Je vous remercie sincèrement pour votre aide, souhaiteriez-vous recevoir un résumé des résultats de l'étude ?

APPENDIX 9: Questionnaire for RB Organics

1. What is you role in the food supply chain?

- Could you describe your activities?
- Who are your clients?
- Do they have special requirements or policies for your activities?
- Who are your suppliers? How many are they?
- How do you choose them? *(Please explain any possible differences between the farmers in the UK and overseas)*
- Do you impose any quality, ethical or other requirement to the farmers? *(e.g. particular organic standards, quality management, good labour conditions or standards like EurepGap).*
- Do you encourage them to develop new methods and techniques, or environmental best practices? *(e.g. any training opportunities or cross-fertilisation sessions)*

2. What type of products / services do you offer?

- Why are doing only organic vegetables at RB Organic?
 Is it more constraining than conventional vegetables? *(please explain any particular aspects, for example less chemicals during the stages at the facility).*
- Are your services differing function of the clients?
- What do you think is the main reason why retailers sell organic produce?
- Which vegetables do you currently offer?
- Does your offer change with the seasons?

3. About French Beans:

- Do you have French beans? (Please precise what type, where do they come from, why and at which period of the year)

Type	Origin	Period of the year	Reason

- How are they processed / prepared / packed / transported? *(Please describe the process)*
- What do you think are the consequences on the taste / freshness / quality / nutrition of the produce?

4. How do you manage your environmental and social impacts?

- Do you have a sustainability strategy? *(If yes, please explain on which aspects)*
- What kind of transportation system do you usually use? Why?

- Have you tried to reduce the impacts of the transport? *(e.g. by reducing the miles or changing the transportation system).*
- How many employees do you have?
- Do you have training and development opportunities for your employees?
- Do you try to raise awareness of populations to organic market?
- Do you try to reduce the amount of packaging you use? How?
- Do you have particular instructions from your client regarding packaging (e.g. less packaging, recycled packaging etc.)?
- What type of environmental policies and legislation do you have to comply with?

5. <u>**What type of relationship / partnership do you have with your different stakeholders?**</u>

- Suppliers:
- Clients:
- Local communities:
- Regulatory bodies:
- Universities:
- Others?

APPENDIX 10 : Questionnaire for consumers

- **QUESTIONS DE BASE**

1. Nom
2. Age
3. Profession

- **MODES DE CONSOMMATION :**

4. En général, préférez-vous cuisiner ou acheter des produits préparés ? Pourquoi ?
5. Les repas traditionnels sont-ils importants pour vous ? Pourquoi ?
6. Vous sentez-vous concernés par la protection de l'environnement ? Comment ? Quel type d'actions au quotidien faites-vous pour ça ?
7. Pensez-vous que des petites actions telles que le tri sélectif peuvent aider ? Comment ? Pourquoi ?
8. A quelle fréquence mangez-vous des légumes ?
9. Où achetez-vous habituellement ces légumes ? Pour quelle raison ?
10. Êtes-vous satisfaits de l'offre ? (choix, variété, goût, qualité etc.)
11. Faites vous attention à la saisonnalité des légumes que vous achetez ? Pourquoi ?
12. Achetez-vous des haricots ? Quel type (variété, origine, marque etc.)?
13. Comment achetez-vous ces haricots ? (Frais, en conserves, surgelés, secs etc.) Cela change-t-il en fonction de la saison ? Pourquoi?
14. Quels critères entrent en compte lorsque vous achetez des haricots ? classez si possible ces critères par ordre d'importance

- **PERCEPTION ET CONNAISSANCE DES MODES DE PRODUCTION:**

15. *Êtes-vous attentif à la manière dont la nourriture en général est produite, préparée et emballée ? Pourquoi ?*
16. Est-ce que l'origine de la nourriture que vous mangez est importante pour vous? Pourquoi ?
17. Est-ce important pour vous d'aider les agriculteurs de votre pays en achetant leurs produits? Pourquoi ?
18. Est ce important pour vous d'aider les pays en développement en achetant leurs produits? Pourquoi?
19. Est-il plus important pour vous d'aider votre communauté ou les pays en développement?
20. Est-ce que le fait que les produits venant de pays en développement nécessitent beaucoup de transport vous dérange? Pourquoi ?
21. Est-ce que la manière dont les agriculteurs et employés sont traités tout au long de la chaîne de production est un facteur influençant vos achats ? Quels aspects en particulier ?
22. Le non-respect de l'environnement est-il un critère susceptible d'influencer vos achats? Pourquoi?
23. Quels aspects vous dérangent particulièrement ? (question ouverte, exemples ci-dessous), si possible classification et explication

- **PERCEPTION ET CONNAISSANCE DES LABELS**

24. Faites-vous confiance aux standards et labels de certification pour la nourriture ? Pourquoi ?
25. Savez vous ce que ce logo signifie / représente?
26. Quels bénéfices / assurances pensez-vous qu'il apporte aux consommateurs ?
27. Avez vous déjà acheté des fruits ou légumes commerce équitable? Lesquels ? Si non, pourquoi ?
28. Avez-vous constaté une différence avec le produit équivalent ordinaire?

Savez vous ce que ce logo signifie / représente?

29. Quels bénéfices / assurances pensez-vous qu'il apporte aux consommateurs ?
30. Avez-vous déjà acheté des légumes bio? Si non, pourquoi ?
31. Avez-vous constaté une différence avec le produit équivalent ordinaire?
32. Ces produits sont généralement plus chers. Est-ce que c'est un problème pour vous? Pensez-vous que ce prix est juste ?
33. Pensez-vous que ces labels ont une influence sur votre mode de consommation en général ? (par exemple en vous encourageant à acheter de manière plus responsable en général, à faire plus attention à vos impacts sur l'environnement etc.)

Merci beaucoup pour votre aide, j'espère que ça n'a pas été trop long!