



A review of the literature and knowledge of standards and certification systems in agricultural production and farming systems (NRI working paper series on sustainability standards No. 2)

Greenwich Academic Literature Archive (GALA) Citation:

Tallontire, A., Nelson, V., Dixon, J. and Benton, T.G. (2012) *A review of the literature and knowledge of standards and certification systems in agricultural production and farming systems (NRI working paper series on sustainability standards No. 2)*. Working Paper. Natural Resources Institute, Chatham, UK.

Available at:

<http://gala.gre.ac.uk/11620>

Copyright Status:

Permission is granted by the Natural Resources Institute (NRI), University of Greenwich for the copying, distribution and/or transmitting of this work under the conditions that it is attributed in the manner specified by the author or licensor and it is not used for commercial purposes. However you may not alter, transform or build upon this work. Please note that any of the aforementioned conditions can be waived with permission from the NRI.

Where the work or any of its elements is in the public domain under applicable law, that status is in no way affected by this license. This license in no way affects your fair dealing or fair use rights, or other applicable copyright exemptions and limitations and neither does it affect the author's moral rights or the rights other persons may have either in the work itself or in how the work is used, such as publicity or privacy rights. For any reuse or distribution, you must make it clear to others the license terms of this work.



This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License](https://creativecommons.org/licenses/by-nc-nd/3.0/).

Contact:

GALA Repository Team: gala@gre.ac.uk
Natural Resources Institute: nri@greenwich.ac.uk

**NRI Working Paper Series on Sustainability Standards
No. 2
September, 2012**

A Review of the Literature and Knowledge of Standards and Certification Systems in Agricultural Production and Farming Systems

Anne Tallontire, Valerie Nelson, Jami Dixon and Tim G. Benton



Photos: Tea plucker at a certified estate in the Nilgiris Hills, Tamil Nadu, India; Workers on a certified estate return home after work; Cocoa farmers from a certified cooperative in Ghana (Valerie Nelson)

Authors:

Dr Anne Tallontire, Senior Lecturer Business, Environment and Corporate Responsibility, Sustainability Research Institute, School of Earth and Environment, University of Leeds, LS2 9JT UK, a.m.tallontire@leeds.ac.uk

Valerie Nelson, Principal Scientist, Natural Resources Institute, University of Greenwich, UK

Jami Dixon, Research Postgraduate, Sustainability Research Institute, School of Earth and Environment, University of Leeds

Prof Tim Benton, Professor of Population Ecology, Institute of Integrative and Comparative Biology, University of Leeds

Acknowledgements

This research was commissioned by Resolve in late 2011, on behalf the Steering Committee of State-of-Knowledge Assessment of Standards and Certification. The consultants were asked to draw on the available literature, data, and his/her own and other expert knowledge to summarize what is known about impacts and performance of certification systems in addressing environmental, social and economic impacts (direct and indirect) of agricultural production and farming systems in order to enhance the State of Knowledge Assessment's chapter on Agriculture.

The authors draw upon research funded by the UK Department for International Development (DFID) on the 'poverty impact of voluntary sustainability standards' see <http://www.nri.org/projects/tradestandards/index.html>. However, the findings are fully those of the authors and not of DFID. It also draws on on-going work led by the University of Leeds on sustainability standards (e.g. ESRC DFID project 'The governance implications of private standards initiatives') and landscape level analysis of ecological impacts of different agricultural practices."

CONTENTS

Introduction 2

Section 1 : The market demand for and the supply of certified products..... 9

1.1 Introduction 9

1.2 Certification in the agricultural sector: rise of private standards 9

1.3 The Role of retailers, consumers, their behaviour, markets, governments and civil society in shaping supply & demand13

1.4 Summary39

Section 2: Knowledge of impacts: methodologies and findings.....41

2.1 Introduction41

2.2 Methodologies43

2.3 Analysis of findings on impact.....64

 2.3.1 Economic Impacts.....64

 2.3.2 Social Impacts.....75

 2.3.3 Environmental Impacts78

2.4 Assessing impact and sustainability.....89

Section 3: Relative effectiveness of certification systems90

3.1 Introduction90

3.2 Relative effectiveness of different standard systems90

3.3. Private standards compared to regulation94

3.4 Standards and value chain interventions97

3.5 Summary.....99

Section 4: What is known about the communication of standards to the public? 101

4.1 Introduction101

4.2 Consumer awareness of standards102

Section 5: Synthesis, gaps and a research agenda.106

References.....112

Introduction

A key trend in the governance of agrifood value chains in last 10-15 years is the increasing prevalence of voluntary or private standards (Henson & Humphrey, 2009). Collectively, private standards are remarkably varied with respect to who develops them, who adopts them, their primary objectives (Henson and Humphrey, 2010) and how far they have been implemented in practice. Although they are characterised as 'voluntary' because they are not required by law, compliance with standards is a key feature of trade in agrifood products, particularly in value chains dominated by agribusiness in which compliance is often a prerequisite for market access. This shift is related to a number of trends in agricultural trade, including: the growth in non-traditional exports from developing countries accompanied by global sourcing by major retailers; the governance gap in some countries where public regulation is weak and thus private regulation has emerged as a gap-filling or risk minimising measure; efforts by some standard setters and latterly companies to tap into the consumer demand for ethical products (Giovannucci and Ponte, 2005; Tallontire, 2007). Moreover, voluntary or private standards "have been regarded as a good tool for tackling the negative environmental and social impacts of conventional agriculture and also ensuring the long-term viability of the supply chain by addressing environmental and social issues that threaten that supply"(Tensie Whelan, pers. comm.).

The significance of private standards in agricultural trade is demonstrated by the interest by inter-governmental bodies of the UN and WTO (e.g. International Trade Centre, UNCTAD, FAO) who have been concerned at both the potential exclusionary impacts of standards and potential to use standards as tool for as development, as well as many multinational corporations who are increasingly adopting standards developed by non-governmental bodies or engaging in partnerships to develop new ones. There is now a complex web of standards operating in the agriculture and food sector, particularly, but not exclusively, primary products produced in developing countries. Yet, having standards and certification in trade of agricultural products is not new (Ouma, 2010), but trends show growth in the number, scope and range of certification initiatives, both in terms of supply and demand. De Battisti et al (2009) count as many as 400 private voluntary standards set by food producing industry and retailers governing food industry in Europe, but this figure includes individual retailer standards as well as the collective standards with which we are concerned in this report.

There is increasing convergence in the content of standards (e.g. the use of ILO standards for working conditions or uptake of environmental provisions by socially oriented standards), and in many ways how they are monitored or audited), but they also retain different orientations. As standards' owners will assert, there are important distinctions between standards in terms of their relative emphasis on the environment, socio-economic issues or their governance structure and market focus (Henson and Humphrey, 2010; Potts et al, 2010) and also how they monitor compliance and use certificates or labels.

Nevertheless, many suppliers are certified by more than one standard system, depending on the requirements of the particular value chain in which they belong or the markets which they are targeting – it is often a strategy to expand their market access. Given that the purpose of most standards is improvement in the socio-economic conditions of production and mitigating environmental degradation, the question arises as to whether this array of standards is positive from a sustainable development perspective, what their intended and unintended impacts are, and whether some standards offer greater impact than others. Indeed the question arises as to whether so-called voluntary or private standards offer a better solution than other approaches (Nelson et al, 2012).

We draw on academic peer reviewed literature, reviews commissioned for donors and standard bodies, as well as research by key international institutions and research institutes. This does not claim to be an exhaustive review, but our work is informed by other meta-reviews that have begun to try and assess the state of the impact evidence base in a systematic way, but which may only focus on single standards or a selection, or may be limited in their analysis. We also draw on our own experience of recent developments, ongoing initiatives and, as yet, unpublished research in the area of private standards and certification in agriculture and impact assessment methodologies.

An alternative approach to undertaking this study would be to do an in-depth, systematic review of the literature, and to conduct a detailed analysis within a quantitative framework. However, our view is that such an exercise would largely be pointless due to the diversity in methods used, the quality of reporting on methodological choices and the significant differences between sites and organisation of production, diversity of socio-economic and political contexts. Another issue is the scale and scope and assessment of impacts, as we discuss in detail in section 2.2. So, our approach to this review is not to simply count studies documenting positive and negative impacts (though we do summarise the general findings in

section 2.3), rather we focus more on methodological approaches used to generate particular findings, discuss methodological challenges from a sustainability perspective and explore methodological developments in impact assessment. In particular, we point to several initiatives that are trying to fill these data gaps and that will be generating more data to answer these challenges, but also note the continuing gaps that should be filled.

The methodologies employed to assess the impact of standards have been evolving over the past twenty years, with early studies in the 1990s recognising the importance of trying to learn and measure impact and later studies seeking to improve methodologies and coverage. However, the evidence base remains somewhat partial, with some studies having less robust methodologies, which undermines the confidence which can be placed in their findings. It is important to note, however, that there is not one single methodology which can be applied in all situations, to address all needs. Different situations and different purposes require different methodologies. However, it is clear that there is a professionalization of impact evaluation generally in international development and this is reflected in standard impact assessment as well. The current evidence base does include rich studies, many of which have been useful in informing standard bodies, donors and producers in improving their practice or informing their decisions. However, this evidence base remains somewhat fragmented and there are significant gaps, which make it difficult to generalize about the relative effectiveness of different standards, not least because this is a dynamic field and the global and local contexts are changing all the time.

In this review we closely follow the terms of reference set by RESOLV, with respect to the standards summarised below in Table 1.2, specifically: organic, GlobalGAP, Fairtrade, the Sustainable Agriculture Network standard (known as SAN, and sometimes referred to as the Rainforest Alliance (RA) standard), and Utz Certified), plus two newer standards – the Roundtable on Sustainable Palm Oil (RSPO) and the Roundtable on Responsible Soy (RTRS) standards. In most of the text the discussion focuses on the first five of these standards according to the availability of literature and the length of time that the standards have been in operation (RTRS only published its standard in June 2010 with its first certification in June 2011; RSPO Principles were agreed in 2005 followed by the criteria and indicators agreed 2007 and the first certification took place in 2008).

So in section 1 we focus on the market for certified agricultural products exploring trends in supply and demand including reflections on how consumers and companies influence these trends. In section 2 we begin by discussing the evolving methodologies in use to assess impacts of standards and standards systems. Informed by this methodological understanding, we provide a summary of key findings from a variety of studies on particular standards or groups of standards in agriculture. In section 3 we consider the relative effectiveness of certification systems both in relation to each other and compared to other approaches to improving 'sustainability performance'. Following this in section 4 we discuss communication of the standards to the public and public awareness of different standards. Here we explore the complex relationship with public regulation and also consider ways other than standards which may facilitate improvements. The concluding section summarises the key findings and presents our analysis of the gaps in knowledge that exist. We propose a research agenda that will enhance our understanding of standards and certification systems operating in agriculture, particularly with respect to how they meet their objectives and broader impacts, intended and unintended.

Before we begin, it is useful to consider the significance of the challenges facing agriculture. Conventional agriculture that has focussed on increasing productivity through new technologies and use of synthetic inputs has resulted in yield gains and lower costs at the farm scale (Foresight, 2011). Yet these gains have incurred high environmental costs and have failed to benefit the poorest with almost one billion people still suffering from hunger and malnutrition, whilst at the same time, over-consumption and food wastage are increasing problems amongst the richest (Foresight, 2011). Agriculture in the 21st Century is marked by unsustainable natural resource use, a changing climate, a growing population and increasing wealth resulting in increased demand for food and other natural resources leading to what Sir John Beddington has described as the 'Perfect Storm'. In a recent report Oxfam (2011) argues that the current global food system is failing and 'buckling under the pressure' of these problems. The projected increase in global food demand can be mitigated by behavioural changes (changes in diet, reduction in waste), but nonetheless, the science consensus is that global demand will increase markedly over forthcoming decades (Godfray 2010; Tilman, Balzer et al. 2011; Beddington, Asaduzzaman et al. 2012).

In the past, rising demands have been met by increasing crop yields, but trends show that in the current system the potential for this to continue is limited. Between 1970 and 1990 global growth in yields averaged at 2 per cent per year, but has declined to just over 1 per cent between 1990 and 2007 (Oxfam, 2011). This trend has led to the claim that “modern agro-industrial farming is running faster and faster just to standstill Increasing irrigation and fertiliser use can only get us so far” (Oxfam, 2011: 15). The impacts of a changing climate on agricultural production also have considerable potential to impact upon yields (Lobell, Burke et al. 2008; Battisti and Naylor 2009; Lobell, Banziger et al. 2011). Though work to determine these impacts is on-going, current modelling studies suggest catastrophic yield declines in sub Saharan Africa (Cline, 2007). If demand is growing, declines in yields put further pressure on global production, leading to a greater demand to clear new land for agriculture, leading to forest clearance, greenhouse gas emission and compounding of climate change effects (Tilman, Balzer et al. 2011). The challenge is therefore to ensure production systems increase resource use efficiency and mitigate environmental impacts whilst maintaining or increasing yields (Foresight 2011; Tilman, Balzer et al. 2011; Beddington, Asaduzzaman et al. 2012). This suggests that when thinking about sustainability standards in the agriculture sector, it is important to keep in mind these ‘big picture’ issues, in terms of both the quantity of food available and also the quality of food, and how it is distributed and the implications of different consumption patterns in different parts of the world. This is not to say that agricultural standards themselves need to include criteria on consumption or food availability, but rather that in assessment of their impacts we need to think about their role and impacts on broader ecological, social and economic systems.

Table A Summarising current environmental problems in agriculture

Environmental Problems	Description	Coverage by standards *
Loss of biodiversity	Both natural biodiversity and agro-biodiversity such as local varieties – often mentioned in connection with deforestation	Organic standards (through prohibiting use of synthetic pesticides), SAN/RA, RSPO and RTRS
Depletion of natural resources and/or degradation of ecosystem services	Frequently mentioned with regard to coffee production.	Implied by RA/SAN's focus on water, wildlife and high conservation areas, as well as carbon mitigation role of trees.
Conversion of natural ecosystems	Destruction of forests, primary tropical forests, peat land. This is closely related to biodiversity losses and climate change. Soy and palm oil are blamed to be major contributors.	RA/SAN include as an explicit aim, as do RTRS and RSPO. Many national and regional organic standards ban organic farming on land of high conservation value recently converted to agriculture, and IFOAM have an international standard covering this
Pollution/contamination of air, soils and water.	Leaching losses from fields through pesticide use, nitrates, phosphates and pesticides, which can also contaminate land and air.	Organic bans the use of synthetic chemicals. Fairtrade, RA/SAN, Utz all aim to reduce use of agro-chemicals and promote better management.
Soil degradation, erosion and / or desertification	Intensification leading to poor soil quality and infertility.	Organic indirectly addresses these issues through its' preferred production methods by enhancing soil fertility and stability. Utz certified and RA/SAN products also include elements of this.
Climate Change mitigation	Agriculture contributes to greenhouse gas emissions associated indirectly through deforestation and energy use and also from direct emissions from cattle, manure, nitrogen from soils etc.	Indirect aim of organic standards. Stated aim of SAN/RA, Utz Certified, RSPO, RTRS (through forest protection and other means)

Source: Adapted from Niggli et al 2010; Shepherd et al 2003

* This column is based on a very broad assessment of the way in which standards do or do not engage with these issues, it is not based on a detailed audit

Agriculture is dependent on the natural resource base and can also clearly contribute to its degradation. Whilst many authors emphasise the need for increases in production to meet the needs of food security, these must be produced in a sustainable way e.g. “to *increase* [our italics] food production whilst not undermining the natural resource base upon which agriculture is dependent” (Oxfam, 2011). This concept of sustainable production growth is also articulated as “sustainable intensification” (e.g. (Foresight 2011; Tilman, Balzer et al. 2011; Beddington, Asaduzzaman et al. 2012)). The private standards discussed in this review implicitly or explicitly aim to address elements of minimising agriculture’s environmental impacts (Table A). The range of and extent to which these issues are covered by private standards varies between standards. Given the current growth in global demand for many agricultural commodities which is driving increases in agricultural production, and the potential for this to cause environmental harm (Tilman, Balzer et al. 2011), certification schemes have a potentially important role to play in ensuring “sustainability” in agricultural production systems.

Section 1 : The market demand for and the supply of certified products

1.1 Introduction

In this section we synthesise literature on the market demand for certified agricultural products, exploring the recent history of private standards, trends in supply and factors shaping demand and the role of the private sector in shaping trends. The literature on these topics emanates from a variety of sources from business and marketing to more critical literature from development studies, economic geography and political economy, which emphasises how standards are governed and the role of power relations in the value chain.

This first section of the review will examine the role of the various actors and how they influence market demand for and the supply of certified products. This will include state and non-state actors both within and beyond global agrifood supply chains. Following on from this review there will be a summary of the various drivers of corporate decisions to become part of sustainability certification outlined in both academic and grey literature. We do not have the space to give this literature a thorough review but wish to use insights from this more critical literature to raise questions about the future trends in standards and the sustainability and extent of their impacts before we move to a deeper discussion of impacts in section 2.

1.2 Certification in the agricultural sector: rise of private standards

Private standards can be considered as an alternative form of governance. Voluntary standards as opposed to government regulation have been developed in response to a perceived failure of governments and markets to deliver ethical outcomes (ISEAL, 2008). Although no single definition can totally encapsulate all of the various forms that private standards take, even when isolating agrifood related ones, some defining characteristics can be identified. Private standards are developed by coalitions of private sector actors for example, commercial or non-commercial private entities, including firms, industry organisations, nongovernmental organisations, (Henson and Humphrey, 2010, Tallontire, 2007). Often private standards are set by powerful actors (De Battisti et al, 2009). Moreover, the extent to which these standards can be deemed voluntary depends on the form and level of power wielded by the entities adopting those standards with respect to their trading partners in the value chain (Ponte and Gibbon, 2005; Jaffee,2008). But as highlighted by Henson and Humphrey (2010), in some cases, especially for food safety, there is a blurring of boundaries between mandatory and voluntary standards (e.g. GlobalGAP is a private

standard, but was developed by European retailers as a response to the EU food safety legislation that placed duties on retailers with respect to their supply chains), see discussion in section 3.3.

It is also important to distinguish between private standards developed by an individual company (e.g. Tesco’s Nature’s Choice, Starbucks’ Café Practices) and collective private standards which may be national or international (Freedom Food, the UK animal welfare standard, compared to GlobalGAP, the international food safety standard initially developed by European retailers) (Tallontire 2007, Henson and Humphrey 2010). Henson and Humphrey (2009) distinguish between three types of standards depending on who was involved in the setting of the standard, some examples are provided in Table 1.1. The standards with which we are concerned in this report can be considered collective or multi-stakeholder standards in that they are developed by actors from more than one sector, usually from civil society/ non-governmental organisations and the private sector.

Table 1.1 Examples of private standards in agri-food supply chains, adapted from Henson and Humphrey (2009)

Individual Firm Standards <i>where companies set their own standards</i>	Collective National Standards <i>set by collective organisations within the boundaries of an individual country</i>	Collective International Standards <i>set by international collective organisation</i>
Nature's Choice (Tesco) • Filières Qualité (Carrefour) • Field-to-Fork (Marks & Spencer) • Filière Controlleé (Auchan)	Organic Standards Freedom Foods	GLOBALG.A.P RSPO RTRS Rainforest Alliance/ SAN FLO Utz IFOAM

Table 1.2 contains further background information on the standards that will be referred to throughout this report. It highlights range of standards, their aims, their geographic coverage and the sustainability criteria they include and emphasise.

Table 1.2 Background information on key private standards in the agri-food supply chain

Standard	Background Information	Aim	Products certified	Membership /Geographic Scope	Sustainability criteria	Compliance and monitoring	Source(s) of information
Organic (NB can be more closely linked to public regulation)	Organic certification was first instituted in the 1970s and started as a voluntary activity. Organic certification includes the control of farms, processors and retailers as well as the chain of custody (traceability). IFOAM requires national standards to be developed through national processes	To promote management practices that rely on crop rotation, green manure, compost, and biological pest control. The use of manufactured N-fertilizers and pesticides, plant growth regulators and genetically modified organisms is banned	IFOAM Crop production, livestock, wild products, fibre, processing and aquaculture	Total 111 countries LDC: 15 Developing: 66 Developed: 30	Predominantly Environmental, some social criteria , little economic. 4 principles: 1)Principle of health, 2) Principle of Ecology 3)Principle of Fairness 4) Principle of Care	Third party certification required by accredited body	Potts et al, (2010), IFOAM [online] ITC (2010)
GlobalGAP	GLOBALG.A.P is a private sector body that sets voluntary standards for the certification of agricultural products around the globe. It is a business-to-business standard (not communicated directly to consumers) focusing on processes along the entire value chain to manage mainly health and safety risks	Aim is to establish one standard for Good Agricultural Practice (G.A.P.) with different product applications capable of fitting to the whole of global agriculture.	Fruits, vegetables, livestock, aquaculture, production, plant propagation materials and compound feed manufacturing	Total: 98 countries LDCs: 10 Developing: 59 Developed: 29	Predominantly environmental, little emphasis on social / economic	Third party certification required by accredited body	Potts et al, (2010), GlobalG.A.P [online] Henson and Humphrey (2009) ITC (2010)
Fairtrade	Fairtrade International (until recently FLO –Fairtrade labelling Organisations International) was formed in 1998 bringing together several Fairtrade labelling systems under one umbrella, the first of which had been established in 1988.	Fairtrade is an alternative approach to conventional trade and is based on a partnership between producers and consumers. It aims to offer producers a better deal and improved terms of trade	Agriculture, composite and manufactured goods incl. bananas, cotton, coffee, flowers, cocoa, fruit, honey, juice, rice, spices, sport balls, sugar, tea, wine.	Total: 64 countries LDCs 19 Developing: 45 Developed: 0	Social, environmental and economic criteria	Inspection by FLOCert an independent certification company	ITC (2010) Fairtrade International

Rainforest Alliance / Sustainable Agriculture Network (SAN)	Established in 1987, it covers social and environmental management systems, ecosystem conservation, wildlife protection, water conservation, fair treatment and good working conditions for farm workers, occupational health and safety, community relations, integrated crop management, soil management and conservation, integrated waste management Farms that meet the comprehensive criteria of the Sustainable Agriculture Network earn the right to use the Rainforest Alliance Certified™ seal.	Aim is to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behaviour.	Forestry products (inc timber, paper) and agricultural products, incl. cocoa, coffee, banana, flowers, pineapple, tea, citrus fruits, avocado, grapes, plantain, rubber and vanilla	Total: 43 countries LDCs: 5 Developing 32 Developed: 6	Focus on social and environmental criteria, little on economic	audited by the independent international certification body, Sustainable Farm Certification, Intl., which certifies to Sustainable Agriculture Network standards	Potts et al, (2010), Rainforest Alliance [online]
Roundtable on Responsible Soy (RTRS)	RTRS is an international multi-stakeholder initiative that was founded in 2006. WWF is promoting the RTRS throughout the supply chain in countries such as Brazil, Argentina, Germany, Netherlands, and the United Kingdom. First shipment to Europe of RTRS certified soy in June 2011. Countries are encouraged to develop a national interpretation of the standard	Aim is to promote the use and growth of responsible soy production, processing and trade throughout the world.	Soy	RTRS currently has around 150 members from all over the world: Producers: 29 Industry, Trade, Finance: 73 Civil Society: 16 Observers: 32	Promotes legal compliance, good business practice as well as social and environmental criteria	4 Preliminary recognized Certification Bodies for Argentina, Brazil & Uruguay	RTRS (2010) RTRS [online]
Roundtable on Sustainable Palm Oil (RSPO)	Roundtable on Sustainable Palm Oil (RSPO) was formed in 2004. RSPO is a not-for-profit association that unites stakeholders from seven sectors of the palm oil industry - oil palm producers, palm oil processors or traders, consumer goods manufacturers, retailers, banks and investors, environmental or nature conservation NGOs and social or developmental NGOs - to develop and implement global standards for sustainable palm oil.	Promoting the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders.	Palm Oil	510 ordinary members Concentrated in Europe, USA, Australia, Brazil & South East Asia	Principles & Criteria (P&C) for sustainable palm oil production. These standards address the legal, economic, environmental and social requirements of producing sustainable palm oil.	RSPO has a list of bodies that can provide the certification. RSPO endorsed training courses are held from time to time for producers and specialist courses for auditors	RSPO [online]
UTZ	Founded in 1997 under Dutch Ahold Coffee Company. One-third of all coffee that is sustainably traded worldwide is certified by UTZ. Utz is based on a business to business model.	Create transparency along the supply chain and reward responsible producers. Part of standard is aimed at enhancing quality as well as promoting sustainable supply chains.	Coffee, cocoa, tea, palm oil, cotton	Coffee produced in 21 countries across Latin America, Asia, Africa, South America, Central America, Mexico and the Caribbean	Evidence of social, economic and environmental and business related criteria	UTZ CERTIFIED has developed the UTZ Codes of Conduct, checked annually by independent auditors	Potts et al, (2010), UTZ [online] UTZ (2011)

Whatever the drivers, standards and certification are becoming a major force in agrifood systems across the globe, and the need for them is only likely to increase in the face of the demands on the food system in coming decades, leading to claims that private agricultural standards have become a business in themselves (Ouma 2010).

1.3 The Role of retailers, consumers, their behaviour, markets, governments and civil society in shaping supply & demand

1.3.1 Overall trends in supply

There is a growing number of standards' initiatives with growth in the volume of certified products and their proportion of the market, indicated by trends for different initiatives (Potts et al 2010), and see Tables 1.3 and 1.4 below. However, the volume of certified produce is still small in terms of overall production statistics. Total market penetration of certified products currently stands at around 10% or less of total global production and trade (Niggli et al, 2010).

Table 1.3 Volume (%) of certified commodities by certification standard

	Coffee (2009)	Coffee 2010	Coffee 2011	Tea (2009)	Tea (2010)	Tea (2011)	Cocoa (2008)	Cocoa (2010)	Cocoa (2011)	Bananas (2009)
RA/SAN ¹	2.2%	2.74%	3.26%	2.9%	6.0%	8.8%	0.2%	1.65%	3.1%	15.0%
Organic	1.8%			0.8%	0.8%	0.9%	0.7%			3.0%
Fairtrade	4.3%			3.6%	3.8%	4.0%	0.1%			2.0%
UTZ	4.8%			0.4%	1.1%	1.5%
Other	8.0%		
Total market share of global production	21.1%			7.7%	11.7%	15.2%	1.0%			20.0%

Source: compiled using data in Potts et al, 2010 and data supplied by Rainforest Alliance calculated as follows:

¹ Coffee calculated using SFC data and: www.icco.org

Tea calculated using SFC data and: www.faostat.fao.org

Cocoa calculated using SFC data and: www.ico.org

Bananas calculated using SFC data and: www.faostat.fao.org

* Percentage of global exports

With the exception perhaps of organic certification where there is a much wider range of product and agro-ecological origins, coffee is the most significant certified product by volume, and value. Certainly for Fairtrade, coffee has been the most traded certified product, and it is also highly significant for Utz which initially was only for coffee. For example, of the 779 companies licensed by Transfair to import Fairtrade certified goods, 512 were coffee roasters and/or importers in 2009 (Jaffee 2010).¹ Why should this be the case? Coffee took on symbolic significance for the early fair trade movement in the 1970s when purchasing coffee from the Nicaraguan Sandinistas or African states in the ‘front line against apartheid’ was based on political solidarity (Tallontire, 2000). As ‘alternative trading organizations’ developed marketing skills and as the ‘coffee crisis’ took hold initially following the collapse of the International Coffee Agreement, coffee became the locus of a new form of fair trade approach, with the development of Fairtrade labelling. This was not just the initiative of European fair trade buyers however; the Max Havelaar Fairtrade label was jointly initiated by Mexican coffee co-operatives keen to defend their livelihoods (Reed, 2009).

As we see in Table 1.3, bananas are more significant than coffee in volume terms for Rainforest Alliance, which is in large part associated with the standards’ landmark agreements with Chiquita and Dole in the late 1990s. The development of certification in other crops responded to environmental crises such as the destruction of virgin rainforest in Central and South America: a key driver for Rainforest Alliance’s work on shade grown coffee and more environmentally friendly production techniques in bananas.

Table 1.4 Summary of key trends in supply and production of certified products

	Fairtrade	Utz	RA/SAN	Organic	RSPO	RTRS	GlobalGAP
Land covered (ha)			1,099,829	26 million	1 million	90,000	
Number of producers	827 producer groups over 1.2 million farmers and	162,164	247,827	1.4 million (2008) 1.8 (2009)			102,300

¹ However in the UK coffee accounts for only 20% of sales, having been overtaken in significance by bananas (at 26% of sales) (Fairtrade Foundation, http://www.fairtrade.org.uk/what_is_fairtrade/facts_and_figures.aspx)

	workers)						
Global coverage (supply)	58 countries	22 countries	32 countries	34% in Africa, 30% in Asia and 16% in Europe.	50 countries	Brazil, Argentina Paraguay.	100+ countries
Global coverage (consumption)	70 countries		global				

Sources: compiled from websites of standards initiatives and additional data direct from Rainforest Alliance

Several standards have origins in civil society movements connected across countries in different ways which has contributed to the geographical distribution of certifications, particularly for Fairtrade and the Rainforest Alliance (see Table 1.5). Given the origins of both movements among producers in Central America, it is perhaps no surprise that we see that 75 per cent of all sustainable coffee comes from Latin America, as compared to approximately 59 per cent for conventional global production. (Potts et al 2010).

Table 1.5 Relative significance of geographic regions to certification schemes

Commodity	Region	Trend	Source
Coffee	Latin America	Supplies 76.5 % of all sustainable coffee compared with 59 % of conventional coffee	Potts et al 2010
Fairtrade Coffee	Peru, Latin America	Largest exporter, followed by Columbia, Mexico and Nicaragua.	ITC, 2011c
Organic Coffee	Peru Indonesia Ethiopia	Main exporter in Latin America Main exporter in Asia Main exporter in Africa	ITC, 2011c
Tea	Africa	Supplies 70 % of certified tea, compared with 32% for conventional export	Potts et al 2010
Bananas	Latin America	Supplies 97% of certified bananas, compared with 72% for conventional export	Potts et al 2010
Cocoa	Latin America	Supplies 48% of certified cocoa	Potts et al 2010
	Africa	Supplies 51 % of certified cocoa	

Three quarters of bananas from the Caribbean have the Fairtrade mark, as a result of efforts by WINFA (Windward Islands Farmers Association), supported by donor programmes, as well as the efforts of Agrofair, a 100% Fairtrade company keen to ensure that the economy of these islands was not devastated by the removal of trade privileges after the demise of the Lomé agreement that protected the industries of former European colonies.² This is a key example of how certification has followed patterns of export trade from the colonial period, something which is mirrored in patterns of Fairtrade certification particularly in Africa. In the coffee sector key African sources of Fairtrade coffee are Tanzania and Uganda, both former British colonies.

The dominance of Latin American producers in certification schemes seems also to relate to differences in organisational capacity and 'institutional thickness' (Amin and Thrift, 1994) in different parts of the developing world. Comparing the evolution of certification and pathways for the future in different parts of the world is an interesting key area for research

² Nevertheless, there remain less than 4,000 small-scale banana growers on Dominica, St Vincent and St Lucia, from 25,000 in 1992 (Fairtrade Foundation 2009).

and a good starting point would be to compare the three continental Fairtrade producer network: the Network of Asian Producers was established around 2007, the Africa network was only established in 2002 whereas contrast the Central and Latin American Co-ordination is well-established and has origins pre-dating FLO (Tallontire, 2009). However, for some commodities, the dominance of certain regions in certification, for example tea, also relates to sourcing decisions by key companies as well as the importance of certified tea plantations in Africa as opposed to smallholder certification (Potts et al, 2010).

Table 1.6 Summary of the drivers of the standards

Initiative	Main Drivers
Organic	Industrialised countries: producers; Developing countries: Export demand EU Policies (Subsidies) Consumer demand
Fairtrade	Mainly NGOs, Consumer demand
GlobalG.A.P	EU Policies Retailers
Rainforest Alliance/ SAN	One NGO (SAN) Other NGOs Media Buyers/ brands
UTZ	Processers/ Buyers Retailer
RSPO	NGOs Retailers
RTRS	NGOs and Food Industries Retailer

Source: adapted from Niggli et al. (2010)

Governments and NGOs have played a role in increasing supply of certified products and the number of farmers taking part in certification initiatives (see Table 1.6). Both governments and NGOs are using certification schemes to link small scale producers with markets (Seville et al, 2010), often funding and supporting certification as part of export-led development strategies ('Making Markets Work for the Poor'), thus increasing the supply of certified products (Lyon2008). Supply has also been affected by the decision by leading branded manufacturers and retailers to use certification according to sustainability standards as a key tool in their supply chain and corporate responsibility strategies see Table 1.7.

Table 1.7 Adoption of standards and targets by leading companies

Commodity and Company		Source
Bananas		
Chiquita	agreed to certify all or part of their products to Fairtrade, Rainforest Alliance, GLOBALGAP and/or organic	Potts et al 2010
Dole	agreed to certify all or part of their products to Fairtrade, Rainforest Alliance, GLOBALGAP and/or organic	Potts et al 2010
Palm Oil		
Unilever	In 2008 made a commitment to purchase all our palm oil from certified sustainable sources by 2015	Unilever, online
J Sainsbury	By 2014 will switch to 100 per cent certified sustainable palm oil	J Sainsbury, 2009
Walmart	By end of 2015 Walmart will require sustainably sourced palm oil for all Walmart private brand products globally	Walmart, 2010
Tea		
Unilever	By 2020 100% tea, including loose tea will be sourced sustainably By 2015 Unilever will make all of its Lipton and PG Tips brand tea certified by the Rainforest Alliance	Unilever, online
Coffee		
Kraft	Kraft have 15 brands that have the Rainforest Alliance or Fairtrade mark. 100% of Kraft's Kenco coffee is bought from Rainforest Alliance-certified farms	Ethical Corporation 2011
Nestlé	Fairtrade Foundation marked Partners Blend launched 2005 in UK	
Nestlé	Nespresso is committed to 80% RA certified by 2015.	Rainforest Alliance, pers com
Chocolate		
Mars	Commit to purchasing only certified cocoa by 2020.	Mars 2010
	The Maltesers brand will have the Fairtrade mark in the UK	Fairtrade Foundation press release Sept 2011
	Rainforest Alliance Certified Cocoa in Galaxy chocolate sold in UK and Ireland in 2010	Mars 2010
	Works with the Rainforest Alliance for products in the USA	
Nestlé	KitKat bar in UK has Fairtrade mark	
	Working with Utz on pilot project in Côte d'Ivoire and KitKats in Netherlands will have the Utz label from September 2011 and reference to the Cocoa Plan	Nestle website & Utz Certified website
Cadbury/Kraft	Dairy Milk received the Fairtrade Mark in the UK in 2009, and this is now available with a Fairtrade label in several countries, including South Africa from August 2011	Barrientos, 2011
Kraft	Kraft has committed their entire Cote d'Or/Marabou range to be 100% Rainforest Alliance Certified by 2012.	Rainforest Alliance, pers com

Unilever	Unilever has committed their entire Magnum brand to use only Rainforest Alliance Certified cocoa by 2015.	Rainforest Alliance, pers com
----------	---	-------------------------------

Corporate decisions on adoption of standards can dramatically affect patterns of supply and foster growth, as demonstrated by the growth of Fairtrade products in the UK which has been partly fostered by supermarket decisions to source all of a particular category from Fairtrade sources (Smith, 2010).

Table 1.8 Development Strategies by Chocolate Manufacturers

Company	Strategy	Rationale	Aims
Nestle	Cocoa Development plan	'shared value'	help improve the livelihoods of farmers and their communities, as well as enhance the sustainability and quality of cocoa grown for generations to come.
Mars	Cocoa Sustainability Program / Indonesia-Vision for Change in Cote d'Ivoire This includes a commitment to certified sustainable cocoa by 2020 including a 100,000 MT commitment to Rainforest Alliance Certified cocoa	Collaborative development; focus on pre-competitive investment to develop sustainable supply chains	
Cadbury *	Cadbury Cocoa Partnership (CCP) –cocoa farmers. The CCP is part of £45 million global cocoa investment programme, covering India, Indonesia and the Caribbean.	'new type of social and business investment model, led from the grass roots.... create conditions to enable Ghanaian cocoa farmers to increase their productivity, improve their income and improve life in cocoa farming communities through community centred development'	An investment programme in Ghana, worth £30 million over a ten-year period aiming to transform the lives and livelihoods of more than half a million cocoa farmers
Cocoa Industry	Sustainable Tree Crops Program World Cocoa Foundation: Cocoa		

	Livelihoods Program – Gates + 15 companies		
--	---	--	--

Sources: IDS and University of Ghana 2008, Mars 2010 & Mars press release [<http://www.mars.com/global/press-center/press-list/news-releases.aspx?SiteId=94&Id=1482>], Nestlé website,

* Cadbury was of course acquired by Kraft in 2010, but the programme included in this table originates from Cadbury part of the company.

These switches can have a huge effect on the sales of a certified product. It is expected that Mars' Maltesers will represent an increase of 10% in UK Fairtrade sales (Fairtrade Foundation press release September 2011). Similarly the decision by Sainsbury to source all its bananas from Fairtrade sources in late 2006 contributed significantly to the increase in Fairtrade banana sales from £66 million to £150 million between 2006 and 2007. A substantial portion of the growth of Fairtrade sales in USA between 2007 and 2008 was due to increased purchases by large transnational firms, primarily Starbucks (which went from 11 to 20 million pounds, roughly 6% of its total volume) (Jaffee, 2010: 273). It is interesting to note recent developments by key chocolate manufacturing cocoa companies which have instigated more 'developmental' approaches in which certification is but a part. They have made significant investments in cocoa producing communities, see Table 1.8. As Mars (2010) says, certification must be accompanied by scientific research, the development of economic opportunities and the development of viable cocoa growing communities. The major chocolate companies have differing emphases, but a fundamental incentive for them is ensuring the quality and security of supply having recognised environmental and social challenges to continued cocoa production, as well as corporate responsibility goals. Cocoa plants are returning low yields, having been threatened by disease (particularly black pod) and concerns have also been raised that economic returns to cocoa production have been insufficient to keep young people in the cocoa producing rural areas, particularly in West Africa. Whilst evidence of impact has yet to be generated, this may be perceived as a 'developmental' approach, but one that has a strong, long-term business case and which is grounded in economic capacity building (rather than social development).

The business strategies of major brands thus become a key driver for certification, as well as other strategies of supply chain management. We explore the rationales for the choice of particular certificates and how they engage with the certification process in more detail below in section 1.4. But first it is important to emphasise that the decisions of buyers are thus a key driver for producers to undertake certification. Whilst in the early days of some

certification schemes, notably Fairtrade, certification could be seen as a choice by producers to enhance the market potential of their product. In the context of today’s standards-filled market, choosing whether or not to become certified is becoming less the marketing choice of producers than an essential requirement for access to particular supply chains or to retaining preferred buyers (MacDonald, 2007 with respect to Fairtrade and Starbucks; Jaffee 2005 and Graffham et al, 2008 for GlobalGAP), though of course this differs across commodities (for example the demand for certified cotton is less extensive than for coffee or tea).

In Table 1.9 below, MacGregor sets out reasons producers in developing countries have complied with standards, based largely on experience with GlobalGAP and fresh produce. Farmers anticipate, and sometimes experience ‘upgraded benefits of trade’ such as support from donors to comply (also identified by Humphrey, 2008) and being compliant or linked to key buyers often brings access to other services such as finance as well as enhancing technical efficiencies. Questions may of course be asked as to whether these benefits can be attributed to the standard per se. We discuss attribution issues in section 3.1 and raise the issue of how standards and certification work with other strategies for quality, environmental and social changes at the site of production and along the value chain in section 3.4. MacGregor identifies six rationales for compliance by producers, but perhaps one is the most significant, especially in the case of GlobalGAP: the lack of alternative approaches that are accepted by the buyer if one wants to access ‘modern’ markets, which are becoming more significant in developing countries as well as in the markets of the global North (Weatherspoon and Reardon, 2003). Far-sighted producers may of course comply with standards because they think this is the right thing to do, ethically and in terms of ensuring that the natural resource base on which they depend for their livelihoods is there in years to come. However, this was not raised in Macgregor’s study, which is largely focused on horticultural producers in East and Southern Africa.

Table 1.9 Rationales for compliance with standards by developing country producers.

Financial	As with any new market opportunity, investment is necessary to comply. Higher income/larger margins (or opportunities for these) are significant drivers.
Technical efficiencies	Improved organisational performance and better chances of organisational survival. Benefits from implementing and running compliant systems result in less fraud, higher yields, and more efficient farms.

Upgraded benefits of trade	Benefits such as training help to support and upgrade organisational performance
Signalling	Compliance signals to all buyers of quality produce the production skills of the farm. Crucially these signals are important in accessing finance, training, information, etc.
Reduced risk	More durable trading relationships than available on alternative markets. e.g., local markets.
Alternatives	For farmers with few alternatives to cash crops, this might be their only option to sell these products.

Source: MacGregor (2008:13)

Supply is also linked to demand, for example the increased demand for certified organic products has led to an increase in the number of certified organic farms in developing countries (Oelofse, 2010). In other sectors, for example coffee, supply of the sustainably certified product is significantly higher than demand (Potts et al, 2010), in some cases due to the nature of certification scheme (e.g. FLO certifies all the production of a qualifying co-operative as 'Fairtrade' but only a proportion of this may be sold on Fairtrade terms, depending on the buyer and market). Thus supply cannot be discussed without considering the role of various actors in driving demand.

1.3.2 Overall trends in demand³

Most studies of ethical or sustainable consumption (up to 90%) focus on consumers in Europe and North America and as Cotte et al (2009: 7) highlight, trends are unlikely to be the same in other cultural and economic contexts. The discussion here focuses largely on trends with respect to Fairtrade and organic standards as these are the standards most frequently covered in most market research analysis, though there will also be reference to more general surveys that examine ethical consumption patterns.

Few academic market or consumer studies have been conducted for the Round Table on Sustainable Palm Oil (RSPO) or Round Table on Responsible Soy (RTRS). Market trends available on line reveal that supply of certified palm oil exceeds demand. Laurance et al (2010) note that the RSPO is faced with weak market demand and that the demand for certified palm oil is also weak among consumers. They attribute this to the fact that the world's largest consumers of palm oil, China and India, have to date shown little interest in

³ Here we focus on discussing general trends. For a detailed collation of recent market research studies for the different schemes we recommend Niggli et al's 'Background material: What is known about market demand for certified products?'

purchasing RSPO certified palm oil which is 8–15% more expensive than uncertified palm oil (Laurance et al., 2010).

Market research and academic literature shows that consumers have an increased awareness and interest in agrifood production and trade motivating them to want to shop ethically (Garcia Martinez and Poole, 2008). This has been most apparent in certain markets, most notably northern Europe and the USA, see Table 1.4. Moreover in some markets certain labels have been more popular than others, for example the persistent and increasingly popularity of Fairtrade in the UK, which recorded sales of £8bn in 2009. In some countries relatively new labels have shot to prominence in a short period, notably Utz in the Netherlands and also Rainforest Alliance in Japan where business alliances have played an important role (ITC 2011c)

The demand for certified agricultural products differs also according to product category, particularly in terms of rates of growth in demand.

Coffee is the world's largest traded agricultural commodity exported by 60 countries and grown predominantly by smallholder farmers. Countries in the European Union (EU), Japan and United States have mature coffee markets that account for more than 50% of global coffee consumption. The United States, Germany and Switzerland are the main consumers for Organic coffee. Coffee has the longest history of certification and national market shares for certified products in the United States and Western Europe have reached 10%-40% (ITC 2011c). However, the efforts of Utz and Fairtrade in promoting their labels in the US suggest, there is potential for further market growth in the USA. (as noted below recognition rates for Fairtrade are 44% in the USA whereas they are closer to 80% in Europe). Utz and Rainforest Alliance, in relatively short periods, have become stronger in several markets, for example the Netherlands and Japan respectively. Whilst demand in non-certified coffee is largely stagnant, certified coffee is showing strong growth and higher retailer prices (ITC, 2011c). In emerging economies, for example, China, India and Mexico consumer demand for certified coffees is also growing (ITC, 2011c). This trend is followed by other agricultural commodities.

Tables 1.10a and b presents some key trends from both academic and grey literature. The information presented in the table demonstrates that data for organic, Fairtrade and ethical shopping generally is much easier to find than for other standards. Similarly data for the

Northern Hemisphere, Europe, US and UK is more widely available. We were supplied with some data directly by Rainforest Alliance on awareness levels. These tables show generally positive trends in sales and importantly awareness of the labels. Awareness of the label is regarded as a key step towards purchase of the labelled product, but as we discuss below, awareness does not necessarily link directly to purchase of the product – ethical decision making is evidently much more complex than this.

Table 1.10a Key market trends relating to demand for certified agri-food products

	Key Market Trends	Market	Source
General Trends	Between 2008-2010 expenditure on ethical food and drink increased 27 per cent to reach £6.5 billion	UK	Cooperative Bank 2010)
	In a survey of Europeans 96% say that protecting the environment is an important issues for them personally. With two-thirds of this group saying that it is “very important”.	Europe	European Commission (2008)
Fairtrade	Consumers worldwide spent £1.6bn on Fairtrade certified products in 2007	Global	Potts et al, (2010)
	In some national markets Fairtrade accounts for between 20-50% of market share in certain products	National, some products	Fairtrade International [online]
	Sustainable banana sales grew 63% between 2007 – 2009 and account for approximately 20% of world exports	Global	Potts et al, (2010)
	Annual growth of 35% Over \$1 billion in sales in 2007, becoming the largest Fairtrade market	US	Jaffee 2010
	In 2009 Fairtrade certified sales amounted to approximately €3.4 billion worldwide representing a growth of 15% between 2008-2009 ; however growth in sales between 2006 and 2007 was 47%	Global	Fairtrade International [online] & Fairtrade Foundation [online]
	Since 2007 sales of Fairtrade products has grown 64%	UK	Cooperative Bank (2010)
	40% of shoppers say they specifically bought Fairtrade groceries, in the last month Over a fifth (21%) of UK shoppers expect to buy more Fairtrade groceries over the next 12 months	UK	IGD (2011)
Organic	In 2010 Sales of organic food fell by 14 per cent since 2007	UK	Cooperative Bank (2010)
	Prompted awareness of the Soil Association label 2008-9 ranged from 35-38%	UK	Rainforest Alliance (2010)
	More than 90 % of organic product revenues are made in the Northern Hemisphere	Global	Niggli et al 2010 FiBL (2010)
	The t United States had the largest market share or organic food sales at around 15.9 billion Euros, followed by Germany with 5.9 billion Euros and France with 2.6 billion Euros	Global	Niggli et al 2010 FiBL (2010)
Rainforest Alliance	Sales of at least £500m 2006	Global	Talking Retail.com;

Table 1.10b Awareness of Rainforest Alliance Certified

	Prompted Awareness of RAC Seal or the Rainforest Alliance
Australia	42%
Canada	35%
U.S.	37%
U.K	54%
Norway	44%
Sweden/Denmark/Finland	25-30%

National Coffee Association’s 2010 National Coffee Drinking Trends Study (U.S)

Coffee Association of Canada, 2010 Consumption Study (Canada)

For other countries, research conducted by businesses working with the Rainforest Alliance

There has been some consumer market research, often surveys, and at a general level, on attitudes to ethical consumption. Some findings are summarised in Table 1.11. As we note below, many of these findings should be treated with caution as there is a frequently a gap between attitude and action in terms of actual consumption patterns with consumers sometimes overstating their desire to purchase ethically (Garcia Martinez and Poole, 2008; Cotte et al 2009). However, it is useful to highlight differences between countries, and also the importance of quality in many markets.

Table 1.11 Consumer surveys by country adapted from Niggli et al (2010)

Location	Share of consumers	Opinion/ Behaviour	Sources
Brazil and ten countries in Europe, Asia, North America	50%	Would recommend a brand that supports a good cause.	Edelman (2010) (not food-specific)
	62%	Would switch brands if another brand of similar quality supported a good cause.	Edelman (2010) (not food-specific)
UK	92%	Are willing to pay extra for a product that is ethically certified despite economic downturn.	Ethical Shopping Price Survey (Arnold, 2008), Edelman research (2008) in Neil (2009)
	25%	Say they are most concerned about animal welfare.	Two surveys by market researcher Mintel in Neil (2009)
	36 %	Care about British origin and/ or local production.	Two surveys by market researcher Mintel in Neil (2009)
USA	n/a	Factors that affect sales: Education Factors that do not affect sales: age, race, ethnicity, number of children, economy	Lester (2010)
	10%	Are spending less on green products.	Citibank Global Wealth Management Group consumer behaviour report in April 2009 in Neil (2009)
	35%	Are spending more on green products.	Citibank Global Wealth Management Group consumer behaviour report in April 2009 in Neil (2009)
	65%	Say they are spending more on products that they know will benefit a good cause.	Citibank Global Wealth Management Group consumer behaviour report in April 2009 in Neil (2009)
France	42%	Showed insensitivity to Organic and Fairtrade labels.	Bastide et al. (2009)
	n/a	Combining the "organic" label and the "fairtrade" label on the same product led to sub-additivity of the WTP compared to the WTPs when the two labels were taken separately.	Lester (2010)
	58%	Were ready to pay more for the ethical characteristics of products.	Bastide et al. (2009)

	17%	Only valued "organic-fairtrade" products if the taste satisfied them.	Bastide et al. (2009)
	28 % (29%)	Are more likely to purchase a product because it promises to protect the environment (and wildlife)	Unilever (2010) (private market survey)
Australia	27 %	Purchase a certified sustainable product because they want to do their bit for the planet / society	Unilever (2010) (private market survey)
	15 %	Are more likely to purchase a product because it promises to ensure good working conditions (in Australia and developing countries)	Unilever (2010) (private market survey)
	90%	Want retailers to offer eco-labeled products.	Living LOHAS 3 Report, Mobium Group, 2009 in Neil, 2009

A recent annual report by Institute of Grocery Distribution (IGD, 2010) monitoring key trends affecting food and grocery shopping has been drawn upon to provide a snapshot of food and grocery shopping trends in the UK. Figure 1.1 represents responses to a question about ethical products that had been specifically bought in the past month presented IGD (2010). According to this study in 2010, only organic food has suffered a small decline and this is mainly among more 'casual' organic shoppers since 2006. Mintel (2010) also indicate reductions in organic sales in the UK as does the Co-operative Bank's Ethical Consumerism report (2010) which shows that whilst in UK expenditure on Fairtrade, Rainforest Alliance and animal welfare Freedom Food certified products has been growing, expenditure on organic products has fallen by 14%. This is explained partly by recession but also competition from other categories of ethical food that have been more consistent in their proposition to consumers, specifically Fairtrade certified products and also products sourced locally. More generally, enabling the consumer to feel that he or she has made a difference or adding clarity on benefits can be an important motivation for ethical consumption choices (Cotte et al, 2009; Garcia Martinez and Poole, 2008). However, whilst organic sales in the UK have fallen, the largest organic market in the EU, Germany, has been stable whilst sales have been were 'still growing' post-recession in France and Italy (European Commission 2010) and industry sources indicate that organic agriculture sales were still strong in the USA in 2010.⁴

⁴ Organic Trade Association, <http://www.ota.com/organic/mt/business.html>

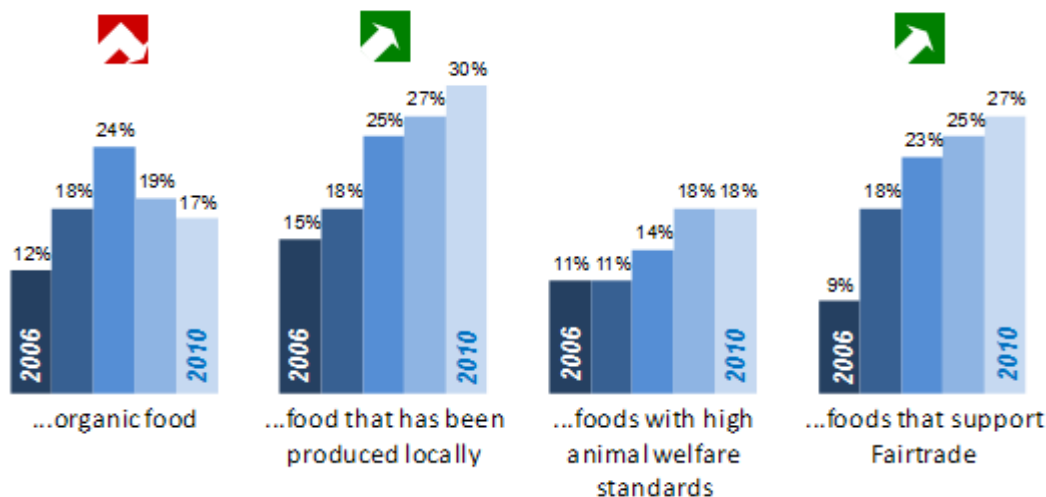


Figure 11 Ethical products specifically bought in the past month (IGD 2010)

Evidence from in-depth research on purchasing habits since the global recession hit in 2008 by Bondy and Talwar (2011) highlights that consumers in the USA, Canada and UK reacted to recession differently with respect to Fairtrade purchases. In Canada and US 'fair trade consumers significantly decreased their consumption of fair trade as a result of the recession, whereas the UK consumers did not' (2011: 365). This difference is explained by the relative ease of accessing Fairtrade goods in the UK compared to North America where Fairtrade goods are more frequently available in wholefood shops rather than mainstream supermarkets as is common in the UK. Differences were also identified between 'active' and occasional Fairtrade consumers, with 'occasional' consumers more likely to purchase cheaper alternatives in the context of recession in contrast to active consumers whose purchasing habits have been unaffected by the global economic problems. They argue that communicators should focus on 'attitudinal' as well as 'behavioural loyalty to fair trade products' (2010: 377). Evidently not all consumers behave in the same way, and there are likely to be huge differences across country contexts. The consumer research industry has developed categorisations of consumer behaviour with respect to ethical purchasing. An example is the IGD's distinction between ethical evangelists, focused followers, blinkered believers, aspiring activists and conscience casuals who differ on the basis of the number of ethical issues in which they express interest and also which guide their purchases. Interestingly the Conscience Casuals, the group described as representing those with no interest in ethical shopping, are now the minority (IGD report, 2008). A report by the Co-operative Bank (2010) noted that in difficult economic environment the more 'committed' shoppers will not want to compromise their beliefs, though they do recognise that for the

aspiring ethical shopper price is a barrier where value for money is a priority. A study drawing on the fifty country database BrandAsset® Valuator, highlights how post-recession, consumption patterns are changing, from 'mindless to mindful consumption' (Gerzema and D'Antonio 2011). This may well underlie why most labels are continuing to thrive despite the economic down-turn. However, as Cotte et al (2009: 6) conclude from their systematic review of 'socially conscious consumerism':

'There is no coherent view of who a socially conscious consumer is. All the usual descriptors used in consumer research, such as demographics (age, gender, income, education, country), psychographics (attitudes, lifestyle, morals, etc) have provided conflicting results thus far'.

Often 'green' or 'ethical consumer' surveys need to be read with caution as academic and industry researchers have typically undertaken large quantitative surveys that typically rely on recall information by consumers with considerable potential for response bias (in Cotte et al's, 2009 systematic review of consumer literature almost three quarters of the studies measured attitudes and intentions as opposed to actual behaviour). The evidence presented in these industry reports support the view that consumer demand for ethical products is still growing, but does little to explain why it is growing and what motivates consumers to translate attitudes and intentions into purchasing behaviour. However, greater efforts to rectify such biases are evident in more recent studies, for example Deloitte/GMA (2009) did not rely on recall but intercepted shoppers leaving grocery stores so that purchases were in very recent memory and the evidence on purchasing habits was available.

Assessment of willingness to pay a premium has been undertaken by several economists. This includes assessing the extent to which customers are willing to pay premiums and products characteristics on which this is dependent. Loureiro and Lotade's (2005) analysis of consumer responses to three private standards related to coffee (fair trade coffee, shade grown coffee and organic coffee) in United States and Europe found that consumers are willing to pay a higher premium for fair trade than for shade grown or organic coffee. They partly attribute the preference for fair trade over organic to the lack of perceived health benefits of organic coffee compared with other fruits and vegetables. In the face-to-face surveys they also note that consumers were concerned with the conditions in developing countries concluding that "altruism towards other humans may play a crucial role when evaluating fair trade practices" (Loureiro and Lotade, 2005:135). They argue that consistent with other literature, educated and wealthier consumers are more likely to choose labelled

products over regular ones. However, some literature on sustainability and consumption suggests that whilst there is a clear trend for the more educated and wealthy consumers choosing labelled products, it does not necessarily hold that lower income groups do not choose to consume certified products (Harrison et al, 2005).

Given the gap between attitudes and action noted above, it is important to distinguish between studies that explore actual behaviour in paying a premium and those that focus on intentions. This distinction is not clear in Table 1. 11 above. In Cotte et al's systematic review, '61% of the studies that measured intentions demonstrated consumer willingness to pay a premium' whereas this fell to '44% of the studies that studied actual behaviours demonstrated any consumer willingness to pay a premium' (2009: 26).

It appears that there is a paradox with respect to the demand for certified products at a general level, as noted in a systematic review of socially conscious consumption by Cotte et al (2009: 6):

“There is a lack of conclusive, empirical evidence that consumers will pay more for socially responsible products or services. Indeed, recent research seems to assume they will not, as consumers will buy responsible products only if “quality, performance, and price are equal” (Deloitte 2008). And yet, research also suggests that the group of consumers most interested in socially responsible products is growing across the world (Globescan 2007)”

There has been more recent work on how and when consumers are convinced to 'buy green', and also importantly the stages in the purchasing decision at which potential green consumers are currently 'lost' (Deloitte/GMA 2009) There is a case for more research on how demand for 'sustainable' food is articulated and what translates concern or interest in to purchasing practices. Quantitative surveys based on reported behaviour have proved inadequate and there is an important role for both experimental approaches and in-depth exploration of purchase decision-making in the context of wider sustainable consumption practices.

Changes in consumer preferences and the rise of ethical consumerism are put forward as drivers of increased demand for certified products, but they are not the only drivers. Other literature has focussed on the role of governments and other civil society actors in driving demand. Furthermore research has also been conducted into the drivers of corporate

motivation for standard compliance, aside from the case that consumers are demanding them.

1.3.3 Governments

Governments have different roles in simulating demand; they can act as buyers (requiring particular standards in public procurement, supporters (e.g. providing technical assistance in the development of standards)⁵, or facilitators of standards (providing financial support) (Carey and Guttenstein, 2009). Part of their role as supporters involves raising awareness, convincing consumers in global north to include these in considerations in purchasing decisions and by putting pressure or providing incentives for consumers and the private sector to value sustainability. They also respond to the concerns of consumers and private sector, which has been described as the 'ratcheting up of regulatory requirements' to guarantee minimum standards (Henson and Reardon, 2005:241). The issue of governmental roles in driving the adoption of standards will be addressed more fully in section 3.

1.3.4 Civil Society organisations

Civil society organisations (CSOs), including NGOs also played an even more central role in driving demand for certified products as the originators of many standards and also due to the role they play in promoting networks of consumers. Fairtrade stands out as a civil society driven movement, particularly in the early years of the Fairtrade label when grassroots campaigners lobbied supermarkets to stock labelled products and with professional campaigners challenging the power of global retail giants (Hatanka et al. 2005; Barrientos and Smith, 2007; MacDonald 2007). The spread of organic food across the globe owes much to the civil society networks at country level and internationally, though some have questioned the extent to which commercial interests now shape the movement (Raynolds, 2004). The international NGO awareness raising campaigns of 1990s targeting the banana sector have been cited as an example of the power of CSO campaigns to stimulate standard adoption in agricultural sectors (Potts et al, 2010).

Civil society has thus played a role in advocacy, identifying the problems associated with agriculture and trade, and also in establishing standards, often in dialogue with the private

⁵ There is some recent research on how local councils have fostered demand for Fairtrade products through their involvement in the Fairtrade towns' movement (Malpass et al 2007, Smith 2011).

sector in multi-stakeholder partnerships. We also see that NGOs have worked more collaboratively with companies in a variety of forums, not only in the development of and implementation standards but also in other efforts to enhance environmental and social impacts of agricultural production and trade (see 1.4 and 3.4).

1.4 Drivers of corporate decisions to adopt standards

Whilst several studies have pointed to the rise of non-governmental power and how NGOs have played an important role in the emergence of sustainability standards in agriculture, increasingly the role of private sector players, notably brands and retailers are playing important roles in shaping demand for standards and shaping patterns of supply of certified products (Hatanka et al, 2005; Tallontire, 2007). From a more conceptual than empirical perspective, several authors have argued that private standards, even those that purport to benefit producers and are developed in a multi-stakeholder process, may be part of a process in which private standards are an instrument that the private sector can use to 'reorganise aspects of the market to better suit its needs' (Busch and Bain, 2004: 322). Indeed it is argued that private standards are used by business as 'strategic business tools' (Hatanka et al, 2005) to comply with existing regulatory frameworks, deal with stakeholder demands and to demonstrate that they are capable of policing themselves (Smith and Fischlein, 2010).

What then has driven companies to adopt certification as a key tool in their supply chains? This question has been addressed from a variety of viewpoints and academic disciplines. We consider the study of role of agri-food standards in regulation, especially with respect to food safety and identify particular examples of studies that have explored which standards are used, how and when by companies.

The consensus in academic literature on agrifood standards and regulation suggests three rationales for private standards (Henson and Humphrey 2010: 1629):

1. A means of substituting for inadequate public regulation in some countries of supply
2. A means of demonstrating compliance with regulatory frameworks
3. A means of differentiating products in the market.⁶

⁶ One may add concern about viability or security of supply, but standards themselves do not provide this, rather the use of a standard helps differentiate a product from a sustainable source of supply, and provides a more immediate market incentive for securing a secure supply, both for the company and the supplier.

Different standards may be adopted for different combinations of these reasons. Some standards may be more focused on risk minimisation (variants of options 1 and 2 above). Where private standards are substituting for absent regulation, the risk is that producers and the supply chain do not deliver safe food or that exploitative labour practices are not curbed, leading to the risk of exposure by media and NGOs (Barrientos, 2000; MacGregor, 2009). The second rationale is more linked to the soft regulatory framework in many contexts where government sets out the principles or objectives, leaving business to identify the means. Ratcheting up of regulatory requirements in response to consumer concerns about food safety has led standards becoming a driving force in agrifood systems across the globe (Henson and Humphrey, 2009). Thirdly, standards may be a means by which companies seek differentiation, especially in markets with segmentation according to quality (e.g. coffee, see Ponte 2004). Hatanka et al (2005) note that as retailers become oligopolistic they prefer to minimize price competition and compete as much as possible on other qualities, for example quality attributes, physical appearance and production practice. Labels are particularly successful at conveying a positive image to consumers argue Giovannucci and Ponte (2005). Compliance with private standards provides an opportunity to attract customers interested in "ethical" issues and reassure wider consumers that they take their CSR seriously (Smith, 2010).

In Figure 1.2 below, devised by Henson and Humphrey (2010) food safety standards are seen to be focused on risk management as opposed to differentiation. This risk management approach extends to standards such as GlobalGAP which they seek to include criteria beyond food safety (to worker welfare and environmental protection) and also the labour rights standard SA 8000 and the Kenya Flower Council's standard. These risk management standards all do not have a product label and are not well-known by consumers. In contrast standards such as MSC, FSC and Rainforest Alliance are regarded as part of a strategy of differentiation rather than risk management.

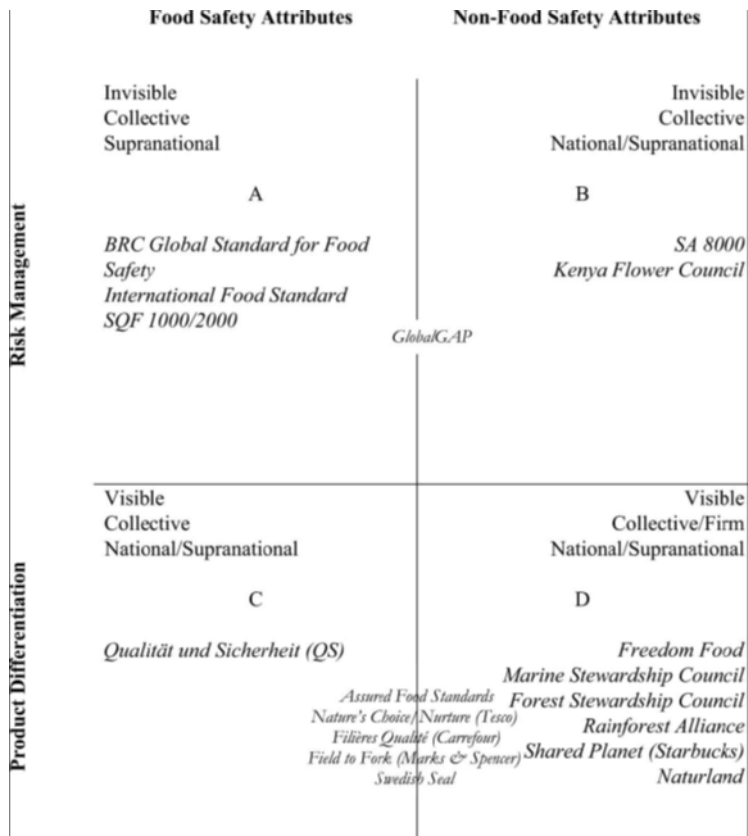


Figure 1.2. Characteristics of risk management and product differentiation standards, from Henson and Humphrey (2010: 1636).

We noted above that chocolate manufacturers have now comprehensive development programmes in key countries of supply that focus on improving agricultural practices and enhancing community benefits from the industry which may be seen as their long term ‘risk management’ strategy. They are then using labels to demonstrate to the consumer that they are good performers, a differentiation strategy. Moreover, whilst their underlying strategy may be the same in countries of production, in consumer countries they are using different labels in different markets (or even different labels for different products), offering slightly different messages in different markets, i.e. in the UK Mars’ Maltesers brand will have the Fairtrade mark whereas the company works with the Rainforest Alliance for products in the USA. This observation has some similarities with MacDonald’s (2007: 808) claim that coffee companies ‘look around for which schemes fit with their corporate values and business model’ and make ‘make highly discretionary selections from a wide range of items on the sustainable coffee ‘menu’, sometimes in response to particular situations. A study on standards in Kenyan floriculture notes how UK supermarkets have affected the development and adoption of some rather than other standards in Kenyan cut flowers, pushing out a

locally developed multi-stakeholder standard in favour of international standards (Nelson et al, 2012).

It appears that company engagement with standards is more complex than distinguishing between risk minimisation and differentiation approaches. Riisgaard (20011) has noted with regards to flowers, private standards often embody a balance between risk minimisation and differentiation. Riisgaard (20011) links risk minimisation with market growth strategies on the part of the standard's owners and differentiation approaches with a focus on principles over growth. However, this focuses on the intentions of the standard setters rather than companies as users, though the role of companies as key players in standard setting processes should not be ignored (Smith and Fischlein, 2010; Tallontire et al, 2011).

MacGregor (2008) presents a range of motivations for retailers to develop standards, as presented in Table 1.12. This largely reflects experience with GlobalGAP and food safety and the desire to demonstrate traceability, drawing on engagement with suppliers, exporters and retailers over the course of a DFID-funded project to examine how private standards affect smallholders. It highlights how standards are not only a means to demonstrate compliance but can be used to facilitate supply chain management.

Table 1.12 Retailer Motivations for the development of standards

Profit	Export horticulture tends to be high-value and niche and as such has a demand profile that is somewhat price inelastic. Consumers tend to be loyal and wealthier. All are ingredients to make sustainable profits.
Outsource	Successful firms seek to outsource non-core activities – PVS enables outsourcing of food safety to suppliers, which frees valuable in-house resources to concentrate on core business.
Risk management	PVS helps distribute risks efficiently throughout the supply chain to those most able to both deal with and communicate food safety
Harmonisation	PVS enables simplified, less risky decision-making and lower transactions costs owing to search and screening (less research on who you can rely on in new countries or regions is necessary), a smaller group of possible sellers, and enhanced compatibility between products by reducing variety.
Communication	PVS upgrades the potential to message accurately to consumers (communicating quality management), suppliers (ensuring they supply appropriate and relevant information as well as product), and competitors (credibility as the originator of a successful industry standard)
Business Tools	PVS are flexible, fully operationalised, hands-free, supply chain management tools that provide incentives to other participants to comply with conditions stipulated by the setter. These participants remain independent, eradicating the need for expensive ownership of the firms involved to achieve these goals. Furthermore, PVS are tools that can be flexibly enforced depending on market circumstances.
Information Management	For information generation, PVS are rich sources of information on the supply chain that facilitate decision-making (e.g., on who to buy from, when, and at what price)
Preferred Buyer	PVS can generate dependency for suppliers on the buyers by restricting exit for suppliers who have invested in sunk costs of compliance; these investments are often amortised over long periods.
Legal requirements for due diligence	PVS ensures compliance with baseline legislation – specifically the main provisions of the General Food Law Regulation (EC) 178/2002 – that applies to food business operators. This includes Article 11 on imports and Article 18 on traceability.

Source: MacGregor (2008: 12)

Few studies have empirically explored the way in which particular companies have adopted certification standards. Key exceptions are and Jaffee (2010) and Smith (2010).

Jaffee (2010) discusses how Starbucks has worked closely with the US Fairtrade Initiative Transfair, partly as a response to US campaigners. He highlights that an important element of Starbucks’ approach to Fairtrade is to combine audits for Fairtrade with the audit system developed for its bespoke scheme, CAFÉ Practices. A similar approach also seems to be adopted by Unilever with respect to Rainforest Alliance certification in tea whereby the company had already developed its own system for improving and monitoring social and environmental practices on-farm and sought a labelling system with the closes match (see Assessment, chapter 4). The role of the label in these cases is therefore as much about differentiation in the market using the label as legitimation as about changing internal corporate practices, though both companies have invested in systems to improve practices defined by their own strategies.

Smith (2010) distinguishes between UK supermarket strategies on Fairtrade, highlighting the difference between companies that make ‘category shifts’ (sourcing all of a particular category according to a particular standards system) and those that adopt Fairtrade lines in a more piecemeal way. See Table 1.13 for detail on supermarkets that have made category shifts for particular commodities in which there has been a category shift and where there has not.

Table 1.13 Category Conversions by UK supermarkets

Retailer	Category conversions and date of conversion	
Asda	None	
Co-operative Group	Chocolate (2002)	Coffee (2003)
	Tea (2008)	Drinking chocolate (2008)
Marks and Spencer	Tea (2006) Coffee (2006)	
Morrisons	None	
J Sainsbury	Bananas (2007)	Tea (2007)
	Roast and ground coffee (2007)	Sugar (2008)
Tesco	None	
Waitrose	Bananas (2007)	

Source: Smith, 2010: 260.

Supermarket approaches to Fairtrade may vary considerably in terms of 'scale and scope of commitment to Fairtrade and in the nature of relationships with Fairtrade suppliers' (2010:257). Cases of deep engagement with suppliers, building up capacity to supply and promotional support for the concept are contrasted with more hand-off attitudes to suppliers which are left to bear marketing risks and thus 'threatens to undermine the ability of Fairtrade to support long-term processes of development' (ibid). Smith argues that Fairtrade often can be " a fig leaf [to] serve corporate preferences for voluntary rather than state forms of regulation" (2010:264) rather than as part of an embedded CSR strategy. This builds on an earlier article (Barrientos and Smith 2005) which differentiates between supermarket value chains displaying 'relational' governance and 'modular' governance. Relational governance was seen in efforts to engage directly with the supplier, where the retailer took on the Fairtrade trader requirements themselves (rather than leaving this to a wholesaler or other intermediary) and was associated with an embedded CSR strategy or customer sensitive to ethical concerns. This was seen as exemplified in The Co-operative's value chain for chocolate. In contrast, modular governance was detected where retailers were led by market share or for some product categories (specifically fresh fruit from South Africa traded by all supermarkets in the sample). In this value chain the supermarkets relied on actors in their supply chain to meet minimum Fairtrade standards and did not engage in the process or developmental aspects of fair trade with a more arm's length relationship. It was seen that suppliers bore risk when seasonal buying programmes were not honoured (see also Reed 2009 for more theoretical discussion on relational forms of governance).

Looking at the retailer or brand company adoption of standards it is difficult to distinguish whether they have been 'pulled in by the potential for profit in the increasingly lucrative fair trade niche or pushed by grassroots activists seeking to leverage fair trade as a corporate accountability tool' (Jaffee 2010: 273). Nevertheless, one can distinguish between 'market-oriented' retailers and 'movement-oriented' companies, he suggests. Three categories are suggested by Reynolds (2009) who identifies a continuum of different company motivations for buying fairtrade coffee:

- Mission-driven: enterprises that uphold alternative ideas and practices based on social, ecological, and place-based commitments
- Quality-driven: firms that selectively foster Fairtrade conventions to ensure reliable supplies of excellent coffee
- Market-driven: corporations that largely pursue commercial/industrial conventions rooted in price competition and product regulation.

For Reynolds, it is the small specialty coffee roasters that fit in the 'quality driven' category, with Starbucks would fit into market driven category. But where do Dunkin' Donuts, McDonalds and Walmart go who do not have direct relations with suppliers?

Indicators of whether the company is motivated by changing practices or by market differentiation may include:

- The percentage of a company's sales that are certified according to a particular certificate;
- Public plans to increase volumes of sales with the certificate;
- Transparency in sourcing;
- Capacity building or other developmental inputs with producers.

Underlying the research on standards in food and value chain analyses discussed above, there is a theme that companies will choose to use standards as part of their CSR strategy when there is a strong business case, for example to protect reputation or to underpin long-term sourcing strategies. As Blowfield and Murray (2008) point out there is considerable rhetoric concerning the business case for CSR activities and limited evidence of a substantive business case. Moreover, it has also been argued that reliance on the business case for motivating sustainable development activities risks limiting the scope of impacts and benefits to those issues that are in the business' direct interest (Blowfield, 2010). To our knowledge there has been very little, if any, published work on unpacking the business case for adoption of sustainability certification standards per se or the advantages of one standard over another in a systematic way from the perspective of business.

1.4 Summary

The market for sustainably certified agricultural products continues to grow at a global level but the rates of growth in some geographical regions may be slowing down. Consumer demand for certified products is segmented and certain categories of ethical consumers are continuing to choose certified products even in recession conditions, but data is limited. Studies show only limited willingness to pay for ethical characteristics, especially if actual behaviour is observed and this varies across schemes. Demand for certified products is shaped not only by individual consumer decisions, but societal factors (including media and NGOs) and also government and institutional purchasing decisions.

Whilst key certification standards are multi-stakeholder, some are increasingly influenced by the private sector through the growing competition and mutual influencing of standards processes (Smith and Fischlein 2010); indeed the decisions of companies with respect to the use of certification schemes in agriculture has been critical to the growth of the schemes. Growth in the market for certified products has been affected by corporate decisions to adopt labels for categories of products, particularly for Fairtrade and Rainforest Alliance. Most companies adopt standards for a combination of risk minimisation and market differentiation reasons, but more research is required on the motivation of companies, particularly, a company's rationale for choosing particular standards in particular situations. Also from the point of view of supply, there is need for more research on the differences between producers in different regions in terms of their propensity to get involved in certification, their capacity to do so, and indeed how this affects benefits (as we discuss in the next section). We know a lot about producers in Latin America, but much less about African and Asian producers and thus factors affecting supply.

In terms of context, most of these schemes originate out of societal concerns for the environment, for food quality or equity of livelihoods. Given the need for agriculture to grow its outputs in the next decades to meet the demands of a growing population, which has greater economic resources, coupled with coping with the impacts of climate change, there is increasing awareness, and an increasing awareness of need, for agriculture to be sustainable (Foresight 2011). As society recognises this, the demand for "sustainable" produce must surely grow. Thus, there is a societal requirement to understand the degree to which products are sustainably produced that must grow: the question is whether certification schemes can fulfil that requirement.

Lessons from research in this area include:

- It is important to distinguish between the value chains: they are not homogenous and the standards choices and approaches of different lead buyers and constellations of actors in the value chain can influence final impacts.
- The decisions of key brands and retailers to switch to a particular label can be an important factor in stimulating demand for certified products.
- There is a need for more in-depth research to explore the decision-making process by brands and retailers: why are certain labels chosen (in certain markets) and to what extent does this complement their internal strategies.

Section 2: Knowledge of impacts: methodologies and findings

2.1 Introduction

To answer the question "to what extent are the standards positively contributing to towards environmental, social and economic sustainability" requires evidence. The earlier parts of this section focus more on social and economic sustainability and individual farm level environmental impacts. Sections 2.2.3 and 2.4 focus on the challenges of holistic assessment of environmental sustainability.

Whilst there are some rich studies available, many that are intended to inform standard bodies (enabling them to manage adaptively to improve impact), and some more academic or donor driven studies that have more rigorous methodologies, it is also the case that there are gaps in the evidence base. There is already recognition of this within the standard, donor and academic community and various initiatives are underway to address these issues – however, there still remain debates about the best way to fill these gaps. The number of standards and the range of requirements are increasing, as is the demand from buyers for compliance. This represents something of a burden for some producers and the risk is that others are excluded. The question of standard impact is therefore an issue beyond the impact on participants, but should incorporate the broader impacts on local communities, economies and the environment.

The intended impacts of standards have not always been clearly defined. Different standards have diverse primary objectives, origins and orientation (Tallontire, 2007), although there are commonly areas of overlap in terms of content. The extent of additional support for capacity building and achieving compliance also varies (see Table 2.1 below). Some of the standards are also changing in content and there has been some convergence between socially and environmentally oriented standards in recent years. Table 2.1 shows the key actors associated with the different standards, the inclusion of social, economic and environmental criteria in the standard content and in which countries they are currently being applied⁷.

⁷ For a detailed comparison of mainly environmentally-oriented standards (as well as FLO and non-FLO certified Fair Trade), see Chan and Pound (2009), which compares their intended beneficiaries, level of detail and relative stringency on social versus environmental criteria and coverage of terms of trade.

Table 2.1 Summary of key features of the standards in agrifood sector.

Standard	Driven by (Actors)	Env'tal criteria?	Economic Criteria?	Social criteria?	Geographic Coverage	Sources
Fairtrade	Mainly NGOs, Consumers	✓	✓	✓	Total: 64 countries LDCs 19 Developing: 45	Potts et al (2010)
Organic	Industrialised countries: producers; Developing countries: Export demand EU Policies	✓	X	✓ **	Developed: 0 Total 111 countries LDC: 15 Developing: 66 Developed: 30	Potts et al (2010)
GlobalGAP	EU Policies Retailers	✓	X	✓ *+	Total: 98 countries LDCs: 10 Developing: 59	Potts et al (2010)
RSPO	NGOs Retailer	✓	X	✓	Developed: 29 510 ordinary members Concentrated in Europe, USA, Australia, Brazil & South East Asia	Potts et al (2010), RSPO (online)
RTRS	NGOs Retailer	✓	X	✓	Total 150, concentrated in Brazil and Argentina, The Netherlands and UK.	Potts et al (2010), RTRS (online)
Rainforest Alliance	One NGO (SAN) Other NGOs	✓	✓ *	✓	Total: 43 countries LDCs: 5 Developing 32	Potts et al (2010),
	* Minimum wage only		*+Health & Safety emphasis		Developed: 6 **mostly labour/employment standards	

Ultimately, the ability of a standard system to have an impact depends upon its components and activities, yet theories of change have not been clearly articulated for many standards. This has complicated the task for researchers in the past, but this is now beginning to change as ISEAL encourages standard bodies to formulate them. To conduct an impact evaluation requires a good understanding of the mechanisms by which a standard system can achieve changes on the ground⁸.

⁸ The on-going DFID funded poverty impact of trade standards project has created generic theories of change as part of its approach, then adapted these for each country-commodity context, in discussion with the producer groups/estates that are participating in the study (see Nelson and Martin, 2011). The ISEAL Impacts code (Assessing the Impacts of Social and Environmental Standards Systems) requires all standard systems to develop theories of change, many of which are currently under development. The FLO Eberhart and Smith (2008) methodology does indicate both avenues of

Following a review of the methodologies employed in assessing standard impact, we continue to explore the evidence base for economic, social and environmental impacts.

2.2 Methodologies

Methods for assessing standards' impacts are evolving. Since initial work began in the 1990s on the social and economic impact of sustainability standards, particularly Fairtrade, a rich set of studies have been conducted - mainly qualitative, snapshot studies - but with some increasingly employing more rigorous qualitative and quantitative methods in recent years. In environmental impact assessment, organic standards have been compared to conventional agriculture for many years. There has been a professionalization of norms and approaches in recent years, but there are still gaps in the evidence base, making generalizations about impact difficult to make – a situation which is also shaped by the complexity of rural social change processes, the dynamics within standards and markets, and the variance amongst different commodities and value chain relationships as well.

In the 1980s and early 1990s there were very few studies about the impact of voluntary trade standards. Initially, an assumption was made that the implementation of standards would lead to positive impacts. However, compliance and impact are not synonymous. There was also limited demand from donors for impact evaluation or from the public and press and only limited monitoring data collection by standard bodies. Spurred by early research⁹ and the growth and mainstreaming of standards, this has led to increased external scrutiny from a range of sources: e.g. articles by journalists, studies by academics, researchers and students, and lately from policy-makers and of course standard bodies themselves.

impact and areas of impact, but did not clearly set out the linkages between them or provide guidance for researchers to do so.

⁹ These early studies were important in developing approaches to standard impact assessment. In Fair Trade (note these are not all studies of FLO certified value chains) various studies were undertaken by the Natural Resources Institute, University of Greenwich and international research partners (e.g. NRET 1999, Malins and Nelson 1999, Nelson and Galvez 2000a and b; Collinson et al, 2002), which compared certified and non-certified producers, using a participatory and qualitative methodology and value chain analysis. Other early examples are the studies by Ronchi (2002 and b), Oxford Policy Management and IIED (2000) and work by researchers at Colorado State University (Murray et al 2003).

The term impact assessment is often used to describe an analysis of the outcomes and long term effects of an intervention (White, 2009a). For example, the OECD Development Assistance Committee (DAC, 2009) definition of impact is *'positive and negative, primary and secondary, long-term effects produced by a development intervention, directly or indirectly, intended or unintended'*. By this definition, any evaluation which refers to impact (or outcome) indicators is therefore an 'impact' evaluation. However, many other scholars in this field now argue that the inclusion of a credible counterfactual is critical to allow for measurement and attribution of impacts of a project intervention. These tend to rely upon quantitative approaches and questionnaire surveys in experimental or quasi-experimental designs and are common in the literature on organic compared to conventional farming dating back to the 1980s, see below.

Outcome evaluation has achieved greater prominence with some donors – a concentration on outcomes achieved in the short and medium term to improve practice by feeding back lessons into action and to be more realistic about the sphere of influence of any one project or programme (see IDRC Outcome Mapping Approach)¹⁰ particularly in complex rural situations. It concentrates on whether planned changes or outcomes have been realised in the medium term rather than on assessment of longer term impacts and attribution. Both outcomes and impacts can be assessed through qualitative studies and participatory quantification of perceptions, and could involve control groups, but this is rarely done to date. Some of the studies covered by the Nelson and Pound (2009) meta-review represent summative evaluations, which identify 'plausible linkages along the impact chain' rather than attempting to prove impact (e.g. via randomized control trials). Certification is different to a development or environment project intervention in the sense that producer organisations already exist prior to engagement with a standard and may adopt certification at different times. Further, significant capacity building support can be given to an organisation to achieve certification prior to achieving certification. Therefore developing a baseline, particularly where considering more than one producer group, can be complex. Many of the earlier studies employ qualitative research methods and are focused more on outcomes, lacking the counterfactuals demanded by some as being part of 'impact evaluation'. In more recent years other studies have been conducted that have employed a more rigorous methodology from the point of view of those that support more accurate measurement and attribution of impacts.

¹⁰ <http://www.idrc.ca/EN/Programs/Evaluation/Pages/default.aspx>

Studies assessing the impact of corporate codes of practice has also played a role in methodological development, including a donor (DFID) funded four year study on the impact of corporate codes of practice (Nelson, Martin and Ewert, 2007) in Kenyan cut flowers and South African wine, which employed a quasi-experimental approach with matched counterfactuals combined with in-depth qualitative research across a range of companies adopting different standards including the Ethical Trading Initiative base code and a qualitative study focusing on the plausible impacts of Ethical Trading Initiative commissioned by the ETI itself (Barrientos and Smith, 2007).

The issue of how far the rhetoric of standard systems in marketing is translated into actual impacts on the ground (accountability) and what lessons can be learned to feed back into practice (learning) has led to a proliferation of studies and activity in this area in recent years and increasing pressure on standard bodies. Standard bodies need to learn what works and what does not and have to conduct studies with only limited funds. However, they are also under pressure to prove their impact using more rigorous methodologies, although there are questions as to whether this is necessary or feasible. It is important that standard bodies improve their impact monitoring on basic indicators and many are now developing global impact indicators to do just this. There is a limit to how much information producer organisations can collect on a regular basis and their capacity to do so. Impact monitoring of core indicators is, however, different to the types of impact studies which might be commissioned of external researchers and involve more extensive data collection implying more resources. Competition between standards and researchers to work with certain groups to assess impact has occurred on a frequent basis and there is a continuing need for greater coordination (which ISEAL has recognized and is attempting to improve). Increasing numbers of studies by researchers and students - often with different purposes and focal questions – have now been completed or are underway. Fairtrade has received much greater attention than other standards, such as Rainforest Alliance and Utz Certified, but this is beginning to change.

More recently several meta-reviews have been conducted to gather together these numerous studies. The meta-reviews reported below all cover empirical studies (the Niggli et al, 2010, review is very useful in providing an overview of standards literature on the content

of different standards, but there is very limited data on the actual empirical evidence of impact as opposed to standard technical content). For example, the Fairtrade Foundation-commissioned meta-review by Nelson and Pound (2009) focused only on FLO certified studies and reviewed 80+ studies, but included only 23 reports covering 33 separate case studies, which have been analysed in detail. This review did not exclude studies that did not have rigorous counterfactuals.

Nelson and Pound (2009) found a number of gaps in the evidence: coverage of other important commodities in the Fairtrade system in a broader range of locations and over longer time frames was deemed of importance, given the bias of current studies towards Latin America and coffee in particular. Studies on Fairtrade impact in hired labour situations are needed given Fairtrade's move into the mainstream. Comparisons of different types of Fairtrade value chains should also be made. There was also found to be insufficient information on the scale of impact (e.g. how far can Fairtrade enable producers to escape poverty?) and more comparisons are needed on the relative contribution that Fairtrade can make to tackling poverty, compared to other kinds of development intervention or other standards. There is limited evidence on the extent to which Fairtrade premium activities have achieved the objectives set by the producers and workers themselves. The extent to which Fairtrade challenges gender norms and empowers women, and the differential impacts of Fairtrade for male and female producers, and other marginalised groups was noted as being under-researched.

Box 2.1: What the evidence base looks like

Of the 33 case studies analysed, 25 (the vast majority) are of Fairtrade coffee case studies (a small number are repeated). Four case studies of Fairtrade in bananas (in Ghana, Costa Rica, Peru and the Caribbean) were found, and three studies of Fairtrade cocoa (all of which are of Kuapa Kokoo). One case study covers outcomes for Fairtrade Fresh fruit producers. No Fairtrade impact studies were found for cotton, sugar, tea, rice, nuts or other commodities for which there are Fairtrade standards. Most of the case studies are from Latin America and the Caribbean (26), with 7 African examples (some of which are repeated) and no case studies from Asia. This bias towards Latin American coffee is probably the result of the history of Fairtrade itself, with its beginnings in Mexican coffee and the continuing bias in terms of sales. The vast majority of the studies are of smallholder farmer organisations. There are two studies of hired labour situations for Fairtrade banana growers and workers (see Ruben *et al*, 2008; and Moberg, 2005).

The studies are diverse in terms of their specific objectives and the methodologies used. Many are snapshot studies (especially the earlier ones) providing insights in a new field. More of the later studies include a longitudinal assessment of changes in producer income and assets over time (e.g. Ruben *et al*, 2008). Some studies pay more attention to context than others. For example, newly liberalized economies present challenges for small producers which Fairtrade can assist with (see OPM/IIED, 2000). Few of the studies move beyond a small number of cases to be able to draw conclusions that are relevant to a whole sector or fully explore these success and context factors across different situations.

Further research is needed to establish what are the key factors driving success, as current studies are weak on teasing these out. (Examples might include: the specific characteristics of the Fairtrade trading chain, i.e. who is the buyer, ATO, differences between retailers; hired labour versus producer co-operative situation; specific characteristics of the commodity itself; changes in world commodity prices compared to Fairtrade prices over time; is the market in surplus or deficit in the market?; size of Fairtrade sales; proportion of sales sold as Fairtrade for a single co-operative or company etc).

Some of the earlier studies have a slightly less critical eye than later studies – some of the more recent studies exploring empowerment issues and producer knowledge and perceptions of Fairtrade in more depth than previously (Moberg, 2005), or the ability of Fairtrade to stabilize prices (Berndt, 2007). The impact of producer networking is explored, but rarely fully assessed. There is increasing funding being made available to strengthen formal Fairtrade networks, with the aim of raising capacity, awareness and eventually sales, yet the differences between the different regional networks (in Africa, Asia and Latin America) are not yet analysed. Few of the studies considered the impact of advocacy interventions of Fairtrade producers and workers.

Many studies address whether producers are getting higher prices for their products and improved access to credit, but there are fewer studies which attempt to measure changes in income, expenditure or assets for participating households. Empowerment impacts are explored in many of the studies (especially organizational strength of producer co-operatives, individual self-confidence), but few of the studies assess social impacts in any great depth (e.g. changes in health and education) or impacts on producers or workers in conventional market. Very few of the studies analyse the gender dimensions of Fairtrade (a notable exception is Ronchi, 2002a) and few disaggregate data along lines of gender or social difference.

Summary from Nelson and Pound (2009)

A follow-on study by Chan and Pound (2009) employed the same kind of methodology as Nelson and Pound (2009) to scrutinize the evidence base for environmentally oriented standards. This review included the Fairtrade studies above, but also covered other standards such as Rainforest Alliance. This meta-review did not exclude studies that have not included a counterfactual. This review found a large number of studies on Fairtrade and non-FLO certified fair trade schemes, a moderate number on organic and FSC, but very few on Rainforest Alliance and Utz Certified. Ruben and colleagues have conducted some influential studies using rigorous methodologies for impact evaluation to analyse Fairtrade impact (see book edited by Ruben, 2008).

The Blackman and Rivera meta-review of 2010 covers a wider range of standards, but only covered bananas, coffee, fish, tourism, timber and non-timber forest products. They used extremely stringent criteria and excluded any study without a 'credible' counterfactual, i.e. they have not included any evaluations based on a 'plausible impact chain' approach. This left only 14 studies as their evidence base – according to Niggli et al (2010) this review also under-estimates the number of scientific studies on organic agriculture, and Kennedy (2011) also finds the number of studies identified to be low. A large literature exists on assessing the environmental impacts of agricultural management (including organics) (see section 2.4). Table 2.2 summarises the studies included in the Blackman and Rivera review and categorizes them according to their approach.

The Rainforest Alliance has recently commissioned a study reviewing the evidence on impact based on a Best-Management Practices (BMP) approach (Kennedy, 2011). To move beyond studies without a rigorous counterfactual, but to escape the high costs of experimental studies and the large sample sizes required for quasi-experimental approaches, this approach instead 'unbundles the individual requirements of certification', i.e. BMPs and explores what 'credible studies reveal about their impacts separately' (Kennedy, 2011: 1). This approach aims to employ the rigour of the counterfactual, but also to 'avoid the logistical issues of examining certification directly' (ibid). As scientists have been studying aspects of core tenets of sustainability certification *outside the certification* context for several years, there is plenty of data available which could be referred to, according to Kennedy (ibid). Further, it is said that because a single certification system employs different

mechanisms or BMPs together, the impacts should be treated separately (Kennedy, 2011). Core BMPs were identified (e.g. creation and restoration of natural ecosystem set-asides and increased tree/canopy cover (in agroforestry systems) and expected impacts outlined. The team collected information for each BMP result (e.g. type of study, climate zone, country and continent, study duration, independent and dependent variables, statistical analyses conducted and significance). A review of thousands of titles, led to 171 being identified as related to the core BMPs. 87 were deemed suitable for inclusion in the database (excluding studies where separating out a single BMP to be able to attribute impacts was not possible). Studies not employing an experimental or quasi-experimental methodology were excluded from the database.

The Kennedy (2011) study concludes that research on the environmental impacts in forestry, agricultural and fisheries sectors is mainly conducted in the temperate climate zone and mainly in the US, Canada and Europe. Short-term studies (less than one year) were found to be most common, but there are a relatively high number of long-term studies (more than five years) particularly on one BMP related to fishing. There are more experimental methodology studies than expected (18 studies) and most common is the matched quasi-experimental methodology. However, while the ISEAL Impacts Code requires member organisations to develop a theory of change and provides guidance on developing monitoring systems, the Kennedy approach gives less attention to the 'methods and information needed to articulate and defend assumptions in the causal progression' and it is suggested that in practical terms this requires 'credible, scientific studies that illuminate direct cause and effect connections related to individual BMPs' (Kennedy, 2011:2).

Table 1. Studies of sustainable certification, by relevance category and sector

Category/Sector	Bananas	Coffee	Fish and shrimp	Timber	Tourism	Miscellaneous
A1: Credible counterfactual	Fort & Ruben (2008a) Ruben & van Schendel (2008) Zúñiga-Arias & Sáenz Segura (2008)	Arnould et al. (2009) Blackman & Naranjo (2010) Bolwig et al. (2009) Fort & Ruben (2008b) Lyngbaek et al. (2001) Sáenz Segura & Zúñiga-Arias (2008)	None	de Lima et al. (2008)	Rivera (2002) Rivera & de Leon (2004) Rivera et al. (2006)	Becchetti & Constantino (2008)
A2: Lacks credible counterfactual	Melo & Wolf (2007) Ruben et al. (2008)	Bacon (2005) Barbosa de Lima et al. (2009) Consumers Int'l (2005) Jaffee (2008) Kilian et al. (2004) Martinez-Sánchez (2008) Millard (2006) Philpott et al. (2007) Quispe Guanca (2007) Raynolds et al. (2004) Ronchi (2002) Valkila (2009)	Hicks & Schmier (2008)	Ebeling & Yasue (2009) Kukkonen et al. (2008) Madrid & Chapela (2003) Markopoulos (1998) Morris & Dunne (2003) Owari et al. (2006) Nebel et al. (2005) Thomber et al. (1999)	None	None
B: Not focused on impact but relevant	None	Calo & Wise (2005) Gobbi (2000) Kilian et al. (2003) Muradian & Pehupessy (2005) Ponte (2004) Potts (2007) TransFair USA (2006) TransFair USA (2008)	Erwann (2009) Gardiner & Viswanathan (2004) Gulbrandsen (2009) Ponte (2007)	Gullison (2003) Kurttila et al. (2000) Schlyter et al. (In Press) Schwarzbauer & Rametsteiner (2001) Vidal et al. (2005)	Rivera (2004) Goodman (2000) Tepelus & Castro Cordoba (2005)	Nilsson & Foster (2004) Rotherham (2005)

Table 2.2. Studies covered by Blackman and Rivera

It is thus clear that impact evaluation is a highly contested arena, yet debates are often fairly vituperative in relation to standards – partly because of the claims made by the standards in their marketing efforts - and often imbued with a lack of understanding of the nuances and implications of the different approaches that exist. Generally speaking there is a much greater demand for ‘evidence’ of development impact from donor governments and agencies and few could argue with this aid effectiveness agenda. However, there is unlikely to be a one size fits all solution to impact methods: different and mixed methodologies and approaches are likely to be appropriate in different circumstances and for different purposes – particularly when looking at complex rural social realities rather than individual technical interventions and depending upon the specific objectives and resources available. But this diversity is not always appreciated by the donor community or scientific community and the choices between approaches are *value laden*.

2.2.1 Approaches of standards

During the 2000s many of the sustainability standard bodies began to respond to the challenge of measuring their impact, but have taken different pathways: some have commissioned external researchers to conduct independent evaluations of producer groups (e.g. FLO) identified by them, and others encourage researchers to work with their own monitoring data which they make available (e.g. FSC) and to share studies with them. Academics, policy researchers, students and standard body employees have been involved in conducting these studies – with varying methodologies and purposes. Donors have tended to commission strategic research aimed at informing future policy and for accountability purposes (e.g. DFID and GTZ, see below).

Despite the recent whirl of activity in this field, tensions remain amongst standard bodies, academics, donors, journalists and others that are currently engaged or acting as observers as to the purpose of impact evaluations, who conducts them, the most appropriate methodologies to use, the credibility of their findings etc. ISEAL – the global association/membership body for many of the major sustainability standard systems – has begun to consider more seriously the need for standard systems to develop M&E systems and to understand and communicate their impact. ISEAL has played an important role in recent years in bringing together the standard bodies to share their ideas and experiences,

and has drawn on external expertise from researchers with the aim of developing the 'Code of Good Practice for Assessing the Impacts of Social and Environmental Standards'¹¹.

The ISEAL 'Impacts Code' sets out the 'process by which standard systems can provide evidence of their contributions to social and environmental impacts as well as learning about and improving the effectiveness of their system. This Code requires that standards systems understand the change that they are seeking to bring about and then measure their progress towards that change'¹². Essentially, the code requires that standard systems create an assessment plan: selecting from a core list of social and environmental issues; defining intended impact for each issue; defining desired behaviour change to achieve key intended impacts; defining strategies; choosing indicators to measure changes in behaviour or practices and whether these lead to desired impacts; gathering data via audit process, issues of priority to stakeholders and unintended impacts; analysis of data and feedback loop to take up and learn from the findings. The different standard bodies within ISEAL are all currently developing their own theories of change, but are all at different stages of design and discussion. ISEAL is beginning a new project this October, 2011, aimed at supporting implementation of impact evaluation by its members. The ISEAL Code sets out three main types of evaluation in standard systems: on-going, outcome and impact assessments. Each of these has differing purposes, foci and frequencies (see Table 2.3 below).

¹¹ E063 Monitoring and Evaluation Guide v1.0 and P041 Impacts Code of Good Practice v1.0

¹² <http://www.isealalliance.org/code>, Accessed 9.9.2011

Table 2.3 ISEAL Code on impact evaluation by standard systems

Type of evaluation	Purpose	Who initiates?	Focus of research	Frequency
Ongoing evaluations	To gather lessons for learning and improvement of the organisation	Standard bodies. <i>An internal process (results are not published)</i>	Short-term: On-going review of monitoring data as it becomes available	Current & regular
Outcome evaluations	Contribute to learning, and are published for stakeholder review	Standards organisations	Short & medium term outcomes expected from the activities of the standards programme (as well as unexpected effects).	At regular intervals
Impact assessments		Standard Bodies and External Agencies	Long-term impact (of the standards system) on specific questions and serves to reinforce the link between the programme logic and those impacts. Refers to a specific activity, an objective assessment of certain (or all) facets of a standards programme. Uses M&E data but other data also to answer specific questions. Requires specific skills & training	Infrequent?

Adapted by Nelson from ISEAL Code (2010)

Further assessment is needed of the current practices of the different standard bodies and of other impact assessments, as each standard system is at a different stage (e.g. in terms of how far they have got in developing a theory of change, their approach to impact monitoring, impact assessment and what they are commissioning or undertaking and the development of monitoring systems.¹³ For example, in FLO certified Fairtrade there is on-going development of a theory of change, improvement of monitoring data collection and commissioning of outcome evaluations and impact assessments using plausible impact chain approaches (see Table 2.4 below). There are also impact evaluations being conducted by external agencies. Within Fairtrade, many of the studies have had a strong learning orientation – to inform the standard system to improve practice – perhaps reflecting the

¹³ See forthcoming NRI working paper: 'Impact Evaluation and Standard Systems' (forthcoming at www.nri.org).

social justice ethos of Fairtrade. However, these studies also play an accountability function, where they are published.

Table 2.4: Some recent or on-going studies commissioned by Fairtrade Organisations

Title	Led by	Who commissioned	Status
'Fairtrade Tea: Early Impacts in Malawi: Impact Briefing Paper	Barry Pound, Natural Resources Institute, University of Greenwich	Fairtrade Foundation, UK	June 2010. Summary published at: http://www.fairtrade.org.uk/includes/documents/cm_docs/2010/fft_malawi_tea_report_aw2_small.pdf
'Fairtrade sugar in Belize' Participatory Impact Assessment.	B. Pound, Natural Resources Institute, University of Greenwich	Fairtrade Foundation, UK	On-going
'Fairtrade nuts and sugar in Malawi'	B. Pound, Natural Resources Institute, University of Greenwich	Fairtrade Foundation, UK	On-going
Study of Fairtrade impact for cotton producers and organisations in Senegal, Mali, Chad, and India	V. Nelson, & S. Smith, NRI and IDS 2010	Fairtrade Foundation and Max Havelaar, France.	<i>Completed, but pending publication.</i>
Study of the Fairtrade impact on cut flower producers in Kenya.	L. Riisgaard, DIIS.	Fairtrade Labelling Organisation.	<i>On-going</i>
Study of Fairtrade impact for cocoa producers in Peru.	K. Laroche, R. Jimenez and V. Nelson (NRI, University of Greenwich).	Fairtrade Labelling Organisation	<i>Currently being reviewed, and then will be published.</i>

Source: Compiled by the authors

Fairtrade has developed its own methodological framework (Eberhart and Smith 2008), which has been used to guide a number of recent studies and is currently being reviewed. It identifies the potential areas of impact of Fairtrade (e.g. on social inequality, producer incomes etc) and the avenues of impact (e.g. producer and trader standards, networking and organisational and business development), through which this impact is achieved. However,

the document does not provide clear guidance on how to create a theory of change, i.e. how Fairtrade inputs might lead to outputs, outcomes and impacts and to adapt this to particular contexts/commodities. This impact chain was elaborated upon by Nelson and Pound (2009) - see Figure 2.1 below. The FLO methodology does not elaborate upon the methodological issues which arise in relation to the specific objectives of a particular study, or how to decide upon the need for a counterfactual, the range of methods that exist and their pros and cons. More work is also needed to identify potential indicators for assessing multiple dimensions of poverty impact, especially empowerment ones that tend to be less tangible and measurable than economic indicators. Indicators to measure organisational capacity and democracy, market access, empowerment, gender relations, and value chain relations will also be important for the Fairtrade standard system.

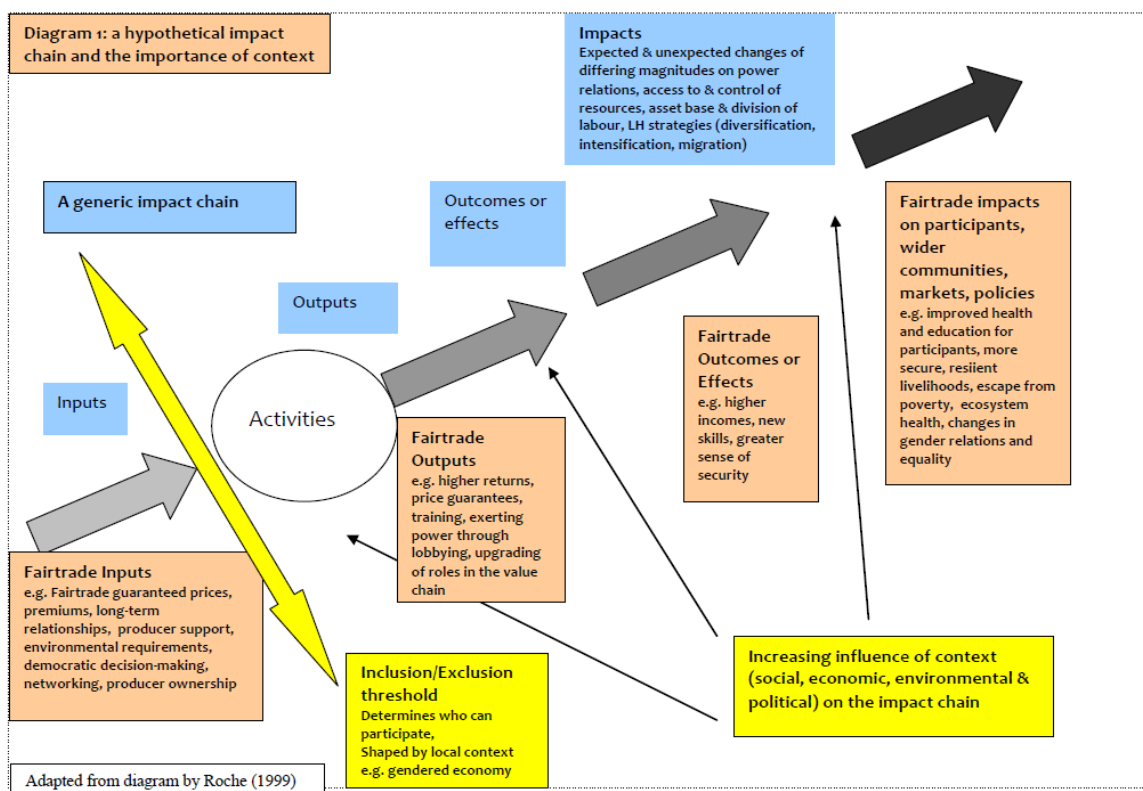


Figure 2.1 Fairtrade Impact Chain

Source: Nelson and Pound (2009)

Other standard bodies are also responding to the new impact agenda: Rainforest Alliance and Utz Certified, for example, are currently collaborating with the Committee on Sustainability Assessment (COSA), e.g. in Cote D'Ivoire on cocoa. Rainforest Alliance recently commissioned the study by Kennedy (2011). All the ISEAL standard bodies are participating in the new ISEAL implementation of impact assessment project.

2.2.2 Attribution and counterfactuals

The ISEAL typology picks up the important issues of *who* initiates, conducts and uses the study - but does not adequately cover the methodological issues pertaining to the thorny question of *attribution*. The ISEAL Code states that 'describing the contribution the standards system makes towards impact, rather than attributing impact directly to the standards system is one way to ensure claims about attribution are not overstated' (ISEAL, 2010: 22). This is indeed important, but attribution of impact is for many scholars more than this: it is dependent upon a comparison of the actual changes brought about by the programme, with the situation (real or hypothetical) as it would have been if the programme had not taken place (the counterfactual) (White, 2009a and b). This can be done in different ways; for example, comparing the situation before and after an intervention; comparing groups who were targeted by, or participated in the intervention with similar groups who were not.¹⁴

However, it is widely recognised that experimental and quasi-experimental studies (Martin et al, 2011) involving credible counterfactuals (experimental and quasi-experimental) have significant costs and longitudinal studies have logistical challenges (Nelson et al 2006; Nelson et al, 2002). As neatly summarized by Kennedy, (2011: 1) 'these approaches require assigning candidate operations to 'certified' and 'non-certified' groups, measuring baseline information, conducting the intervention (certification) and then comparing performance at an appropriate time period post-intervention. While the quasi-experimental method is somewhat more flexible as it does not require random assignment to treatment groups, it does require that the treatment group be 'matched' to similar control operations, which can also be difficult to find and involve in a study. To compensate for introduced uncertainties in such matched approaches, a high sample size becomes important for achieving meaningful results. And high sample sizes typically come at a high financial cost'.

However, as well as these logistical and financial barriers, there are also questions regarding the appropriateness of these methodologies in situations of complexity. Many rural development specialists suggest that the complexity of rural social and environmental change processes create multiple variables and dynamically interacting factors so that simple counterfactuals are unworkable (Patton, 2010). Martin et al (2011) also note in their

¹⁴ This is likely to be practically impossible for some environmental issues.

study on agricultural extension and evaluation that the use of experimental and quasi-experimental approaches can bias the focus of a study towards more easily measured aspects – i.e. technology diffusion and adoption, rather than more complex institutional changes, empowerment, gender equity, environmental impacts etc. It is possible to work with counterfactuals using qualitative methods, but this is rarely done, and so it may be possible for standard bodies to conduct more extensive qualitative studies than in the past, drawing on a counterfactual group more than in the past (even if not in an experimental type design), and involving questionnaire surveys especially on core questions such as farmer yields, prices, etc, but with more understanding of how to interpret the results and what can be accurately said from the findings. Mixed methods are also possible, and often highly desirable, but have resource implications which few but donors can meet.

In some situations there is no clear counterfactual.¹⁵ There may not be a like-for-like comparison between different groups and regions. There may be structural reasons why some farmers are able to join a farmer organisation and others are not - which are not related to the standard – and which would create a systemic bias in the data if not taken into account. Access to producer organisations and estates can also be tricky, particularly for studies independent of standard bodies, which can also undermine a robust sampling framework if an ideal sample cannot be achieved on the ground. Many producer organisations are currently stacking up or taking on multiple certifications, which can complicate comparisons - where it becomes difficult to separate out attribution of impact between the different standards, but also where there is a change in status (e.g. decertification, certification to new standards) which can undermine an 'ideal sample' over time. In other words it can be difficult to hold the ideal sample together over several years, which may be compounded by logistical difficulties in maintaining research teams over a number of years (Nelson, Martin and Ewert, 2007). We may only have information for a limited set of circumstances unless series of studies are conducted – which would also represent a significant cost and might still not provide unambiguous answers. One-off studies, though providing valuable information, will not be sufficient to cover the many different conditions such as changes in global commodity prices, value chain relations, local contexts, standards.

¹⁵ E.g. Where all the producers in a location fall within a certification scheme or are within the only producer organisation in the region – as found in a recent study of Belizean sugarcane workers commissioned by the Fairtrade Foundation

For standard bodies that may be seeking to rapidly learn lessons to improve practices in specific value chains and that have limited resources to invest in impact assessment, the question arises as to '*what is good enough?*' This may vary with the objectives of the study (i.e. whether more learning or accountability oriented). However, a challenge exists in that standard bodies want to learn how to improve their own impact, but also want to meet accountability demands from consumers, commentators, journalists, academics, and donors. But unless their methods and approaches are robust and can be adequately defended then publication of findings, which may have ambiguities or might just be poorly designed - will open them up to criticism. This does not necessarily mean going down the experimental/quasi-experimental route, but it requires capacity building amongst standard body staff as to what the options are and what the implications of each path for their organisation and movement.

It is also worth noting that more participatory approaches are more likely to base their findings on the judgements and framing of participants at the local level, because the questions asked are more open and explorative, and indicators of impact can emerge from local perceptions and priorities – although some studies have used a sequence of participatory/qualitative research to inform a larger-scale quantitative household survey (see the corporate code impact study, by Nelson, Martin and Ewert, 2007). Most participatory studies of Fairtrade, have tended to rely on constructing 'before and after' comparisons or identification of significant change with participants and limited discussions with non-Fairtrade farmers/workers, as a way of indicating how standards might have affected the lives of participants. This leaves a level of ambiguity except for questions on participants' own perceptions of impact over x years (i.e. what has changed for them). The lack of the counterfactual means that there is greater ambiguity in what has caused these changes. Nonetheless such evaluations can be critical, less resource intensive tools for informing standards and participants themselves in a more empowering, less extractive type of study.

Quantification through participatory methods is under-researched in the standard system context. Qualitative information appraisal might be an effective approach for projects to 'capture qualitative information rapidly and cheaply, and to target effective corrective and progressive action at both community and project level. The QIA consists of a Quantified Participatory Assessment (QPA) that translates community level information generated using standard PRA tools into numbers, Stakeholder Meetings (SHM) with communities, field level staff and senior project management to discuss the reasons behind the QPA findings, and

an Action Planning Report (APR) with suggestions to overcome problems identified' (James et al, 2003). This type of approach could be used by standard systems, as part of a learning approach, although it may not meet the demands for measurement from some quarters. Participatory Fairtrade studies (see many of those reviewed by Nelson and Pound, 2009) have employed participatory methods, such as semi-structured and key informant interviews, focus groups, case studies, visual tools, scoring and ranking exercises etc., an analysis of stakeholders affected by the project and the wider or unexpected impacts.

The role of donor agencies merits consideration. Quite often donors have funded impact studies, but there has not been sequencing of multiple studies or 'cumulation' (Pawson and Tilley, 2007). The question as to whether this matters is not adequately answered. There has been some criticism that donor funded impact evaluations use up resources (as they often fall within the experimental/quasi-experimental paradigm), and are not conducted in a series with the same or some shared methods and indicators – but in one-offs, with the data being underused (beyond potential immediate policy influence). It is questionable whether one-off, longitudinal, experimental-type studies can provide the type of unambiguous answers on impact in complex situations which donor funders are after. However, they can still be informative, rich in findings, and can contribute to the overall research body of empirical evidence and can cover a larger number of producer organisations than many of the case study type approaches conducted by students, some researchers and standards themselves.

The Committee on Sustainability Assessment (<http://sustainablecommodities.org/node/127>) of COSA is currently seeking to develop a global online platform with the International Trade Centre (UNCTAD-WTO), which was formalized in 2009. COSA, established in 2005, has developed a methodology and aims to collect datasets from COSA partners and others so that these can be available for others to run queries (e.g. on the effects of participating in sustainability programmes based on field data, the effects of sustainability on yields, biodiversity, costs of production, health, labour practices, education, market access and risk management. The database will cover different variables (country, farm size, certification type and gender). See Figure 2.2 below which visualizes the indicators on which COSA field studies will collect data. COSA has aimed to develop 'agreement to ensure globally comparable and neutral indicators resulting in data that can serve for multi-criteria analyses' (from website), although some standard bodies, particularly socially oriented ones, might feel that there are only limited indicators relevant to their objectives to date.

COSA has various international partners (IISD, CATIE, INCAE/(CIMS) and CIRAD and has established collaborations with several standard bodies, namely Rainforest Alliance and Utz Certified. They have conducted pilots in five countries to gather baseline data: Costa Rica, Honduras, Kenya, Nicaragua and Peru (COSA, 2008). The indicators have been since refined in to 'better account for counterfactuals and include more neutral metrics', and this reduces average field survey times. In 2009 the COSA methodology began to employ Propensity Score Matching to improve rigour in relation to enhanced control group selection.



Figure 2.2 COSA's framework, from website

It is not clear if any annual visits/repeat surveys have yet been conducted, which would generate impact data. The website suggests that 'the ability to apply COSA as a management tool that assesses the impacts of sustainability efforts is becoming a valuable asset and is being incorporated into several sustainability initiatives themselves as they seek improved ways to measure and monitor their efforts'.¹⁶ Not all standard systems, however, have as yet signed up to COSA. While it provides a broad set of indicators, it may not be appropriate for all of the existing standard systems, or fit with the ethos of all standards, some of which – particularly socially oriented standards, might ultimately seek a more participatory approach, with room for locally developed indicators.

It also important, however, that social justice standards such as Fairtrade consider their environmental impacts, since this is an integral part of sustainability. Sustainability essentially comprises three pillars: environmental, social and economic, which are inter-related and many would argue co-dependent. Assessing environmental sustainability is complicated by a range of indirect and distant effects, such that many assessments are at best partial. In particular, what may have a positive benefit at one locality may be moderated by effects at distant locations (for example, the much discussed potential food security and deforestation offsite impacts that biofuel schemes may create and which biofuel standards

¹⁶ <http://www.thecosa.org/news.html>

may struggle to control). There are also effects operating through the market, through effects to do with scaling up, or through effects driven by negative impacts at different points in the production/transport chain. Better understanding of the nuances of environmental sustainability is required to ensure that the standards promoted in the market and which gain legitimacy do not exclude more rigorous standards or alternative approaches to promoting sustainable agriculture.

2.2.3 The problem of assessing environmental sustainability *sensu stricto*

Most of the work to date on assessing the environmental impact of standards has been undertaken with the farm or site of production as the unit of analysis. Some studies raise issues about off-site impacts, but by and large most studies do not go beyond the farm. But at the level of the farm. However if we are to consider the environmental sustainability of standards in a strict sense, it is important to consider impacts at larger scale. However, this is far from a straightforward thing to do, how to determine environmental sustainability is very much an open research question. There are three principal reasons for this complexity. Firstly, environmental sustainability is something that can be, and should be, measured using multiple currencies: impacts on biodiversity, water quality, energy use, greenhouse gas emissions, soil quality etc. These currencies may typically not be correlated: so an intervention increasing one measure may decrease another, and in which case how should the different currencies be weighted? For example, in a Swiss study comparing farming systems: “a reduction in plant protection intensity by banning certain pesticide categories reduced negative impacts on ecotoxicity and biodiversity only, while increasing other burdens such as global warming, ozone formation, eutrophication and acidification per product unit” (Nemecek, Huguenin-Elie et al. 2011). Secondly, what happens on a particular farm is only an element of the production system as a whole. Products are used on farm, but bought off farm. Outputs from the farm (whether products, nitrogen run-off, GHG emission) contribute to wider effects. One of which is especially complicating: if local yields are decreased by an intervention, yet demand stays the same or increases, the implication is that yields will need to increase elsewhere, or more land brought into production. Thus, where one draws the “system boundary” crucially affects the assessment of sustainability (however it is measured) (Cooper, Butler et al. 2011). This complication is increasingly being recognised in terms of needing to undertake system-wide life cycle assessment to assess sustainability, but as yet doing this for more than one or two currencies has not (to our knowledge) been undertaken. The third complicating factor is that the same intervention can have different impacts depending on the location. For example, the type of soil affects the level of energy required for tillage, the potential for carbon storage and the impacts of

fertiliser on water quality (Gaines and Gaines 1994; Gaiser, Abdel-Razek et al. 2009); and the impacts on biodiversity of particular practices will depend on what species live in the locality and their abundance, and because many organisms move across landscapes, a change in management on a farm may have population impacts beyond the farm..

Thus, assessing “sustainability” and how to do it is very much a current research question and highlights a very important research gap, as well as raising some questions about what can be interpreted from the various studies conducted to date, especially on environmental impacts as different approaches, at different scales, and in different locations, can produce quite contrary results. If environmental sustainability is claimed to be validated by a certification scheme, and the methodology is not transparent to the multiple issues within assessment of sustainability, there is the risk that claims can be countermanded by the on-going development of more sophisticated approaches based on life-cycle (and multi-scalar) assessments.

In short, comprehensive assessment of environmental sustainability (and to an extent, also economic and social sustainability) needs to include assessment of the following.

1. **Multiple currencies:** e.g. greenhouse gases, water, soil condition, biodiversity impacts etc. Is each currency equally important, or is one or a few more important?
2. **Land use effects:** by requiring more land if yields drop, and demand is inelastic, lower yielding farming systems will require more land in total, which leads to off-site environmental impacts;
3. **Scale effects as you move from small to large scale:** an isolated farm doing the same thing as a landscape full of the same farming practices will have different effects, and this scaling up is unlikely to be "additive" (i.e. it will be non-linear). It is therefore possible for an intervention to be positive when rare and negative when common;
4. **Landscape effects as different places often do different things:** As farming interacts with the local landscape, what may be a positive intervention in one place may be negative in another.
5. **Off-farm and distant effects:** As a farm does not exist in isolation from its environment or supply chain. For example, off-farm effects can arise via importing cattle feed for developed world farms from the developing world (soy or palm kernel extracts), or via diffuse pollution or water extraction (leading to down-stream effects).

That relatively few studies address any of these complicating environmental sustainability factors, and none addresses all of them, means that despite best efforts, it is difficult to interpret the literature and come up with any meaningful and robust conclusions. Often what is taken as evidence of an impact should, at most, be taken only as partial evidence. Clearly, given the complexity of scale, multiple currencies, off-farm and life-cycle effects, it is unlikely that any certification scheme can develop a sufficiently robust and simple assessment methodology properly to assess environmental sustainability in a strict sense. However, there should be greater recognition of these issues and that single-scale, single-currency, on-farm assessments do not give any guarantee of improved environmental sustainability.

The complexity of the issue also explains some of the variability of results in the literature, outside of variations in economic and social context. What may improve something in one system at one place and time, may not when replicated elsewhere, or what may be interpreted by one method of analysis at one scale may be negated by another.

2.3 Analysis of findings on impact

This section summarizes the findings from the literature on economic, social and environmental impacts of voluntary sustainability standards.

2.3.1 Economic Impacts

The economic impacts of different standards are felt by individual producers, but also at the organisational level, in terms of capacity building, market access and export capability etc, and there can also be effects on the local economy and amongst broader stakeholders at the local level (e.g. local communities, traders, etc). Theoretically speaking standards can have a range of impacts on producer incomes, although because standards have different approaches this will affect the types of impact that they can have – at producer level and beyond.

Fairtrade can affect producer incomes through mechanisms such as the Fairtrade Minimum Price, the Fairtrade Premium, and through achieving improvements in yields, productivity, efficiency (e.g. due to cost reduction and improved cultivation and management methods)

and subsequently the companies' capacity to compete) and quality¹⁷ but participants also incur time costs (attending meetings) and changes in labour requirements (Nelson and Pound, 2009). Standards such as Rainforest Alliance and Utz Certified can affect producer incomes through capacity building and standard requirements leading to improvements in yields, productivity and product quality, although a resilience assessment might also indicate that yield consistency is also affected. Organic agriculture, Rainforest Alliance and Utz Certified products do not provide a set premium to producers, but can draw a market premium.

At the farm level producers can benefit from price premiums, changes in their profitability, revenue distribution, and new business opportunities (Nelson and Pound, 2009). In the 'impact of Fair Trade' edited by Ruben (2008) a number of relevant scientific papers are brought together, with the findings presented from field surveys in Ghana, Kenya, Mexico, Ecuador, Costa Rica and Peru. A review of this book by Niggli et al (2010) finds that Fairtrade producers receive stable (and sometimes higher) prices; minor improvements in household expenditures were found, an important wealth indicator – with positive and negative exceptions; producers' own welfare perceptions reveal only minor and mostly non-significant differences to non-fairtrade producers.

In four in-depth country case studies in Brazil, China, Kenya and Zambia a recent German government study (German Federal Ministry for Economic Cooperation and Development, BMZ, 2008: 4) found that the Cotton Made in Africa (CmIA) standard when introduced in Zambia and the Fairtrade standard in Brazil, had had 'very positive effects on incomes. However, Fairtrade has a very limited market and was frequently not capable of accepting the full quantity of products produced in accordance with the standard'. It is not clear exactly the methodology employed in this study, except to say that it covers micro, intermediary and macro levels. The report goes on to state that 'Besides immediate effects of the incomes, the productivity, quality and efficiency (due to cost reduction and improved cultivation and management methods and subsequently the companies' capacity to compete rose considerably in almost all of the sectors. As a result of the certification, the producers now have access to more attractive export markets' (BMZ, 2008: 4). However, for small-scale vegetable producers in Kenya, no substantial impacts on producer incomes were found, partly because of the diversity of standards in the market and the costs of certification.

¹⁷ Fairtrade sets a Fairtrade Minimum Price (FTMP) which is activated once market prices fall below this line. This represents a mechanism that provides greater stability and security for farmers, but also means that in a rising market, Fairtrade price premiums are not available to Fairtrade producers.

However, beyond the improvements in farmer profitability, there are also likely to be costs incurred by farmers when they participate in certification schemes. Producers are generally expected to pay for the certification process, although some Fairtrade organisations receive support in this regard. There are instances of NGOs and other donors bearing the costs of certification (ITC, 2011b) or where the costs are divided between producers, exporters and other donors (Graffam et al, 2009). However, there are also costs incurred as a result of changes of management practice, implementing systems, or record keeping. These costs are predominantly borne by the producer and may often be recurring. Producers usually pay fees for annual certification and/or annual audit. The costs associated with various standards are broken down in Table 2.5. Fairtrade involves attendance at meetings as part of a democratic process but this can be seen as a burden by some producers (Jaffee, 2008).

Producers usually pay fees for annual certification and/or annual audit. The costs associated with various standards are broken down in Tables 2.5, 2.6 and 2.7.

Table 2.5 Certification costs along the supply chain:

Initiative	Who is certified?	Producer Costs	Buyer/Trader/Processor Costs	Retail Costs
UTZ Certified	<ul style="list-style-type: none"> Individual certification (plantations and estates can be treated as individual producers) Multi-site certification Group certification Multiple group certification 	<p>Direct costs: Producers pay no fee directly to UTZ. Audit costs are controlled by the certification bodies; producers pay the audit costs, which vary by size and travel required.</p> <p>Indirect costs: Implementation costs occur through implementation of the UTZ Certified criteria. UTZ has attempted to address this through a stepwise certification approach, whereby producers are certified based on an annually increasing number of requirements. This attempts to ensure an achievable entry level against a lower, up-front investment.</p>	<p>Chain of Custody certification allows roasters, traders and grinders to buy and sell UTZ Certified coffee, tea and cocoa.</p> <p>CoC is not mandatory for all members of the supply chain.</p> <p>•the first buyer on the UTZ Certified supply chain is also required to pay an administrative fee of US\$0.012 per pound for green coffee, €0.025 per kg for tea, to cover administrative costs</p>	The legal owner of a product (one who also handles that product) must have Chain of Custody certification
FLO	<ul style="list-style-type: none"> Cooperatives Plantations Multi-estates 	Fairtrade charges an annual fee based on the size of a cooperative/plantation/ estate and its processing installations that is designed to include the organization's audit costs	National licensees (roasters/buyers/traders) must pay a license fee of US\$0.10 per pound to cover administrative costs.	
Rainforest Alliance/SAN	<ul style="list-style-type: none"> Farms Groups Multi-site <p>Chain of Custody</p>	<p>RA/SAN require annual audits. The audit costs are paid directly to the independent inspection bodies. The costs vary depending on the size of the client and distance the that an auditor must travel.</p> <p>Farms and CoC operations often need to make investments in order to comply with the certification requirements..</p>	There is a royalty payment for the use of intellectual property.	Rainforest Alliance charges no licensing fees.
GLOBALGAP AP	<ul style="list-style-type: none"> Cooperatives Plantations Multi-estates Chain of custody 	<p><i>Paid to GLOBALGAP:</i> • Membership Fee—not mandatory; this fee is only paid if the organization wishes to have the right to vote at GLOBALGAP annual general meetings.</p> <p>• Producer Registration Fee— this fee can go toward the membership fee if a producer decides to become a member.</p> <p><i>Paid to certification bodies:</i> • Annual audit—audit costs are controlled by the certification bodies; producers pay the audit costs, which vary by size and travel required. Producers can also qualify for GLOBALGAP certification with other standards that meet GLOBALGAP's benchmark (e.g., fully approved national GAP standards like CHINAGAP)</p>	<p>GLOBALGAP charges membership fees:</p> <p>Importers/exporters without production pay €1,550 per year;</p> <p>Associate Members pay €1,550-3,600 per year</p>	Retailer members pay €3,600 per year.

Source: Adapted from Potts et al. (2010:120-1), with additions from Rainforest Alliance, pers com.

Table 2.6 Table showing certification fees associated with GLOBALG.A.P

Types of fees		euros per year	
Producer registration fee	< 2 hectares	3	Note: Maximum aggregate fee is 30 €.
	>2-15 hectares	10	
	> 15 hectares	30	
Chain of Custody fee		100	
Membership fee (not mandatory)	Producer group or Producer organization	2,550	per product
	Individual producers	1,550	per product
	Additional product	500	per product

Source: copied from Potts et al (2010:124)

Table 2.7 Example organic certification costs from a Mexican Case Study, copied from

Type of cost	Group of producers (> 100 producers)	Firm (>2-99 producers)	Single producer
Inspection costs*	600	400	400
Travel expenses of auditor	200	200	200
Membership fee	450	450	450
Accompanying costs (technician required for certain operations and plants)	200	200	200
Administrative fee	100	50	50
Total	1,550	1,300	1,300

Source: Potts et al (2010:124)

Impacts on farmer yields

Compliance with many of the standards requires changes in agricultural practices for farmers and these can lead to changes in their yields – which may have a knock-on effect on their incomes. For example, Rainforest Alliance SAN and Fairtrade standards both include provisions on management practices. There is some evidence of positive impacts on coffee yields.

There is also evidence that organic standards, through reducing synthetic inputs, can reduce yields. The average yield is only part of the picture, however, because its variability may also be important. Pimentel et al (2005) in their longitudinal comparative study found that corn yields under drought conditions were 28% - 34% higher than in conventional farming

systems, so that organic farming may reduce average yields but increase the resilience of the system. Some studies have found organic yields to be higher, notably in developing world studies, but such studies are typically confounded as joining certification schemes is often associated with farmer training and improved management practices, and it may be these factors, and not the restriction on synthetic inputs, that result in increased yields. Although the costs of external inputs are potentially reduced in organic farming, the additional labour costs are estimated to be 15% on average (ranging from 7-75%) and these can undermine any economic gains. Price premiums do not always compensate for yield losses and/ or increased labour costs (Niggli et al, 2010).

The literature suggests that different standards and the management and agricultural practice guidelines they provide have a mixed effect on crop yield which depends on other factors external to the standard (Reganold et al, 2001). Giovannucci and Ponte (2005) suggest that the simplest way to establish the economic viability to farmers is to assess the extent to which paying the extra premium pays. For example, Sutherland et al (in press) showed in a carefully controlled study that despite having much lower yields (46% for winter cereals on paired field comparisons with conventionally farmed ones), organic farmers had a higher net margin in the UK. This study also illustrates an issue of scale: when neighbouring farms do similar things, there can be an effect on yields (e.g. by neighbours planting flower crops, pollinator populations can grow, leading to a net positive effect on yield (Westphal, Steffan-Dewenter et al. 2003), or via market effects (which can be positive – when enough farmers produce enough to form a market, or negative via neighbours flooding the market). Thus, what may be perceived as positive at the farm-scale, may become negative when scaled up.

While not specifically focusing on producer income, the findings of the Blackman and Rivera (2010) meta-review are pertinent here (see Table 2.8 below for a summary). The authors assess socio-economic impacts and find that only 14 studies fit their criteria of 'credible counterfactuals, focus on impact etc. Some of these pertain to agricultural commodities such as bananas, coffee and cocoa. But only six present some evidence that certification has positive impacts: one shows a positive environmental impact and five show positive socio-economic impacts (but the researchers comment that in two of the latter the findings seem idiosyncratic or inconsistent). Eight of the remaining 14 studies fail to find that certification has an observable impact. Thus of these studies selected according to certain criteria there

is ‘very weak evidence for the hypothesis that sustainable certification has positive socio-economic or environmental impacts’ (Blackman and Rivera, 2010: 12). Of the three eligible studies on bananas only 1 shows positive impact: ‘in Ghana and Costa Rica, most socioeconomic indicators were no higher for certified farms than noncertified farms. Only Fort and Ruben (2008a) find that certification may have an impact....FT certification in Peru boosts farm productivity, presumably by generating on-farm investment’ (Blackman and Rivera, 2010: 13), in other words through requirements that FT premiums are invested rather than consumed.

Table 2.8 Summary ‘credible counterfactual study’ findings,

Study	Findings
Bananas	
Fort & Ruben (2008a); FT and Organic standards; Northern Peru	Producer socio-economic status assessed. Certification may have an impact, through boosting farm productivity (possibly by generating on-farm investment).
Zúñiga-Arias and Sáenz Segura (2008); FT standard; Southern Costa Rica	Farmer households’ socioeconomic status is assessed. No significant difference is found for income, expenditures, and profits indicators between FT and non-FT households, but FT households have higher levels of wealth and invest more in education and training – collective decision-making about the use of FT premiums is attributed as the cause. FT farmers have a more positive view of their current and future well-being and a stronger feeling of belonging to their community.
Ruben and van Schendel, 2008; FT standard; Eastern Ghana	FT workers: receive lower total salaries and have lower total family income than non-FT workers, but work fewer hours and receive more fringe benefits. Total expenditures for the two groups and subjective assessments of job safety, job satisfaction, and fairness are not significantly different
Coffee	
Arnould et al. (2009): FT impact; Nicaragua, Peru, Guatemala	Variety of socioeconomic indicators. FT certification is positively correlated with coffee volume sold and price obtained, but less consistently correlated with indicators of educational and health status.
Blackman and Naranjo (2010); organic certification	Compare rates of adoption of four environmentally friendly farm management practices. Organic certification improves coffee growers’ environmental performance. It significantly reduces chemical input use and increases the adoption of environmentally friendly management practices
Bolwig et al. (2009); Organic certification; Eastern Uganda	Certification boosts net coffee revenue by 75 percent on average, but this revenue effect is not principally due to price premiums offered to certified farmers. Rather, it is an anomaly of the “contract farming” organic marketing system in their study, which requires participants to

	process their coffee before selling it, thereby increasing its value.
Fort and Ruben (2008b) ; FT & Organic. Peru.	Socioeconomic status in central Peru. In comparing organic FT farmers and matched organic non-FT farmers, the study finds no significant difference in income or investment, although FT farmers have more of certain types of assets. In comparing nonorganic FT farmers and nonorganic, non-FT farmers, the study finds FT farmers have lower incomes and productivity but higher levels of some assets and investments. The authors attribute the limited benefits of FT in their study to the “deficient distribution and use” of the FT premiums. <i>N.B. A methodological concern is that the matching does not control for important differences between the cooperatives (such as percentage of coffee sold as FT) that almost certainly affect outcomes</i>
Lyngbaek et al. (2001), Organic certification; Costa Rica.	Socioeconomic impact of organic certification in Costa Rica. The authors find that average yields on organic farms were lower than on conventional farms and that average net income (excluding fixed certification costs) were similar for both groups, mainly because of price premiums received by organic farmers. However, if certification costs were considered, net income for organic farmers was significantly lower than for conventional farmers.
Sáenz Segura and Zúñiga-Arias (2008); FT impact; Costa Rica.	Socioeconomic status. Compared with matched non-FT farmers, FT farmers have lower incomes, profits, and household expenditures and worse perceptions of the functioning of their cooperatives. <i>N.B. A methodological concern is that all FT certified farmers belong to one cooperative and all non-FT certified farmers belong to a second cooperative. As a result, unobserved factors correlated with cooperative membership (not FT certification) may drive the observed differences between FT and non-FT farmers.</i>
Other agricultural products	
Becchetti and Costantino (2008); Non FLO certified fair trade; Mango, guava, lemon, sorghum, maize, millet, okra, red pepper; Central Kenya	Analyze the socioeconomic impact of FT certification of a variety of agricultural products. The number of years of affiliation variable is positive and significant in two of the six selection effects models: for nutritional quality and satisfaction with living conditions. FT certification has causal impacts on these two variables.

Note: Of the 37 A1 and A2 studies in the evidence base, 18 focus on coffee, 9 on timber, 5 on bananas, 3 on tourism, 1 on fish, and 1 on a portfolio of agricultural products. Of the 14 A1 studies that construct a reasonably credible counterfactual, 6 focus on coffee, 3 on bananas, 3 on tourism, 1 on timber, and 1 on a portfolio of agricultural products. Finally, of the 23 A2 studies, 12 focus on coffee, 8 on timber, 2 on bananas, and 1 on fish.

Source: from Blackman and Rivera (2010) Fairtrade Impact Review¹⁸

Six Fairtrade coffee studies have ‘credible counterfactuals’ and of these only two show positive socio-economic impacts (Arnould et al, 2009; Bolwig et al, 2009)¹⁹ and one

¹⁸ Full references can be found in Blackman and Rivera (2010).

¹⁹ Arnould et al. (2009): certification generates a price premium, but this is not consistently correlated with socioeconomic indicators; Bolwig et al. (2009): socioeconomic benefits are mainly due to a design anomaly of the certification scheme (Blackman and Rivera, 2010).

(Blackman and Naranjo, 2010) shows a positive environmental impact (Blackman and Rivera, 2010). The other three studies conclude that certification either has minimal socioeconomic benefits or actually generates a net cost (Fort and Ruben (2008b), Lyngbaek et al. (2001), and Sáenz Segura and Zúñiga-Arias (2008) in Blackman and Rivera (ibid). Many of the other coffee studies which do not fall into the 'credible counterfactual' category fail to find a correlation between certification and socioeconomic or environmental benefits. Even among studies that do not attempt to construct a credible counterfactual, many fail to find a correlation between certification and socioeconomic or environmental benefits (Blackman and Rivera, 2010). So although four studies²⁰ find that certified farmers receive higher prices, earn higher profits, or engage in fewer environmental harmful practices than (unmatched) noncertified farmers, there are three others which are less positive in their findings²¹ (Blackman and Rivera, 2010). Further, two other studies (Calo and Wise, 2005 and Kilian et al., 2004) produce farm budget models that indicate that price premiums for certification may be too low to achieve profitability (Blackman and Rivera, 2010). The Becchetti and Costantino (2008) study on various agricultural commodities finds positive impacts for Fair Trade certification in terms of nutritional quality and satisfaction with living conditions (Blackman and Rivera, 2010).²²

A question of increasing importance is: 'How far Fairtrade can support workers and farmers to escape poverty?'. The answer to this question is not yet very clear. In other words what level of impact can Fairtrade (or other standards for that matter) be held responsible for? Is sufficient impact is being achieved? A new DFID funded study, being conducted by the Natural Resources Institute, is currently conducting longitudinal studies with counterfactuals in Fairtrade and Rainforest Alliance value chains in Ecuador and Ghana (cocoa) and India and Kenya (tea) – attempting to explore and measure poverty impact. The Nelson and Pound (2009) review questioned the evidence on this basis, and the Chan and Pound (2009) meta-review also questions whether certification impacts could lift producers out of poverty. According to a Comic Relief study (Smith, S 2011) a number of recent Fairtrade studies have

²⁰ Bacon (2005), Barbosa de Lima et al. (2009), Consumers International (2005), and Millard (2006) cited by Blackman and Rivera, 2010.

²¹ Jaffee (2008), Martínez-Sánchez (2008), and Quispe Guanca (2007)

²² We would note that the Blackman and Rivera (2010) summaries of the studies conducted evaluate their findings from a particular point of view: namely, only studies in the experimental or quasi-experimental paradigm can prove impact. This is perhaps contestable – see earlier section on methodology and the challenges to this paradigm from some sectors of the evaluation and learning field.

also found this to be the case, 'particularly for producers with average to low volumes and/or those selling a proportion of output on certified markets, although there is little doubt that the Fairtrade Minimum Price reduces vulnerability to price volatility' (Smith, S 2011, p40).

Beyond increasing producer incomes various studies of Fairtrade impact suggest that there can be a contribution to income security or 'peace of mind' for smallholders (Nelson and Pound, 2009). However, this mechanism of impact is only active where local market prices fall below this guaranteed floor price. Currently, for example, cocoa and cotton prices are high and so the FTMP is not currently active.

However, there is some evidence that standards can exclude some smallholders from the value chain. As standards become requirements for market access in certain commodities – particularly in situations such as Kenyan tea or cut flowers where there are multiple standards – that there can be an undue burden on producers and some are excluded by the costs of compliance. Certification may become less about gaining advantage and more about staying in the market (Hatanka et al, 2005).

There is a risk that the introduction of standards may act as a barrier to smallholder participation in the value chain. From surveys, conducted in Kenya, Graffam et al (2009) found that many Kenyan exporters significantly reduced their involvement with small scale farmers following the introduction of GlobalGAP standards. They argue that, due to their better access to finance, infrastructure, and their greater human-capacity, large scale commercial growers find it easier to comply with regulations compared with smaller farms. Case studies for other initiatives have shown that certification schemes can act as a barrier for small-scale producers to access global markets, i.e. they can represent a mechanism that benefits medium to large farms differentially (Smith and Barrientos, 2005). This illustrates that standard impact is somewhat complex and is not only about the farm level impacts for workers and smallholders *within* the value chain, but about the scale of coverage, whether some smallholders end up being excluded from value chains, and how other non-participants, stakeholders and the wider economy (ITC, 2011b). The ITC (2011b) review suggests that producers can be part of markets (e.g. Fairtrade, organic) that are growing, and Fairtrade can connect producers to markets (in tea, Reynolds and Ngcwangu, 2010; and coffee Giovannucci and Ponte, 2005 in ITC, 2011), but when these standards become de

facto requirements, they can effectively become a trade barrier both for developing countries and small scale producers (Maertens and Swinnen, 2007).

Some studies argue that whilst certification may have benefits, power relations remain essentially unaltered (Giovannucci and Ponte, 2005) . Other case studies contradict this claim (Maertens and Swinnen, 2007). Maertens and Swinnen's (2007) case study in Senegal found that although shifts are taking place, for example small farmers gain more from being labourers in horticulture rather than farming in their own right, marginalisation is not occurring and exports are actually increasing. This implies that more research is needed to analyse the extent to which standards act as a barrier to global markets and what are the wider impacts that can be associated with standards.

Improvements in export capability are strongly influenced by the approach of the buyer (values or mission-driven, quality or market driven, with quality-driven buyers most likely to collaborate with producers to increase and maintain quality (ITC, 2011b) and market-driven value chains are probably least likely to involve challenges to conventional trade relations.

A key principle of Fairtrade is the attempt to support smallholder economic empowerment – and this is largely attempted through supporting organisational strengthening, linking producers to new market opportunities, and business skills training etc. Economic benefits of certification can accrue where support for organisational strengthening occurs (MacDonald, 2007), i.e. where certified farmers or their organisations gain new skills, information and relationships. Nelson and Pound (2009) in their meta-review of 33 studies of Fairtrade impact found that 22 identified positive empowerment aspects of participating in the standard. This review includes qualitative, outcome oriented studies, which are different to the impact evaluations with counterfactuals covered by Blackman and Rivera (2010). However, it is also perhaps the case that qualitative methodologies may be more appropriate for teasing out less tangible impacts such as producer perceptions of empowerment, self-confidence, security/stability etc. In terms of economic empowerment the Nelson and Pound (2009) meta-review concludes that Fairtrade can lead to economic benefits for individual producers, through improved producer self-confidence, improved market and export knowledge, and greater access to training (Nelson and Pound, 2009). The Fairtrade producer support function delivered through the national Liaison Officers (LOs), investment of the Fairtrade

Premium, and requirements for democratic organisation can lead to a strengthening of organisational capacity and sometimes to enhanced market knowledge and negotiating skills. From the studies reviewed, the evidence suggests this can sometimes lead to an increased ability to attract other sources of funding ('honeypot effect'), to reach new markets, to negotiate with buyers etc (Nelson and Pound, 2009). The impact of Fair Trade' edited by Ruben (2008) found that there is an overall 'positive and significant effect of fairtrade involvement on the strengthening of local farmers' organizations and trade unions'.

Often Fairtrade value chains are treated as being homogeneous, but in fact there are differences between them (see discussion of Barrientos and Smith 2005 and Reynolds 2009 in section 1, also Reed, 2009). Yet there are few studies that systematically evaluate the relative impacts of these different kinds of Fairtrade model (Tallontire, 2009). Alternative trade organisations, such as CaféDirect and Twin Trading, or NGOs in some instances provide significant support such as technical advice and capacity building, and this additional support seems to increase impact significantly.²³ Where Fairtrade producers or workers may not have external support and where they sit within a value chain that involves many of the same actors as conventional value chains – e.g. workers on estates or smallholder outgrowers supplying UK supermarkets – the impacts may not be so clearly defined.

2.3.2 Social Impacts

Trying to assess the overall impact of standards on social wellbeing can be limited by the scale of the market (e.g. if limited proportions of a producer organisation output is actually sold on Fairtrade terms) and by the nature of the standard itself. Whilst Fairtrade and Rainforest Alliance are explicit in their promotion of social benefits, Fairtrade is the only standard which emphasises both the tangible and intangible social dimensions for producers. Rainforest Alliance and other standards when referring to social systems link it to labour standards and/or management systems and processes, for example, on farm documentation and record keeping (Rainforest Alliance, 2010). Whilst this individual or organisational capacity strengthening may still provide indirect benefits to producers, it may not be directly linked to the content of the standard. From the literature reviewed it is not clear whether

²³ A recent study of Fairtrade cotton in Mali, Senegal, Cameroon and India found that in Mali where an NGO was providing support there were more positive impacts than for producer organisations without such capacity building and investment (Nelson and Smith, forthcoming; also see Phillips 2011 with respect to Malawian sugar producers).

these intangible benefits are directly attributable to the standard per se or to what extent they whether represent existing conditions or are a result of the additional support and training provided (Giovannucci and Ponte, 2005).

Although the economic impacts of certification are important considerations, many Fairtrade studies have shown that even when there is little immediate monetary benefit various other positive social impacts can be found, such as farmer satisfaction increasing (Rickson, Saffigna et al. 1999) or from demonstrating social and ethical values (Naoufel 2011). These impacts emerge in both qualitative and, outcome oriented studies, as well as some of the more longitudinal studies involving counterfactuals. Direct social benefits to the producer can be obtained in Fairtrade in terms of gaining knowledge skills leading to overall capacity strengthening, plus improved confidence and self-esteem, access to basic rights such as access to education for producers' children, participation in decision-making (Nelson and Pound, 2009).

In their literature review of the impacts of standards on producers in developing countries, ITC (2011b) report evidence of increased satisfaction, well-being, free time and security directly linking to participation in standards. It is not clear, however, from the review (ITC, 2011b) what types of studies provide this evidence, which standard they refer to or the methodological rigour involved in gathering and reviewing evidence. In some of the literature highlighted in the review increased wealth from economic gain is presented as the main driver of these indirect social impacts (ITC, 2011b). Other indirect social impacts on producer livelihoods reported in the literature relate to increasing amount of and diversity in food consumption (Jaffee, 2008), home improvements (MacDonald, 2007) with wider benefits to education and health (see Nelson and Pound, 2009 for examples; Ruben, 2008).

The German Federal Ministry for Economic Cooperation (BMZ, 2008) finds that there have been positive impacts on living and working conditions of targeted groups by social and ecological standards, with a higher degree of organisation and improved social cohesion in cooperatives and rural communities. Employees at certified businesses were found to have higher incomes than those in comparable companies, plus a reduction in overtime, the aware of written employment contracts, a decrease in staff turnover and health and safety risks

reduced through use of protective clothing had all be discovered (BMZ, 2008). However, more scrutiny is needed by of the study methods employed in these country case studies.

The Fairtrade premium has been found in various studies to have wider community benefits – including improvements in health services, education and infrastructure (Nelson and Pound, 2009). The size of the premium means that often benefits do not accrue at the producer level but are used by a cooperative to have social benefits beyond the group. Local community members can benefit from Fairtrade investment in community infrastructure. However there is also evidence of the premium being divided up to increase individual incomes thus limiting wider benefits (Nelson and Pound, 2009).

In summarising the findings from their literature review the ITC (2011b) note there may also be wider social benefits of forming an organisation or cooperative. Being part of a group may also serve to build social capital as there is greater participation by community in decision-making (Carrera et al., 2004). Strengthening the role of co-operatives or organised groups may serve to build community relations and also provide an opportunity to address weaknesses in social and institutional relations within a community (ITC, 2011b; Giovannucci and Ponte, 2005). Interestingly, Transfair in the U.S. has recently split from the international body, FLO (Fairtrade Labelling Organization) over a disagreement as to whether larger coffee producers should be allowed to participate. Whereas FLO is sticking to its origins in supporting smallholder coffee producers, the US based Licensing Initiative has decided to adopt a different strategy, and to move beyond 'co-operatives' as the preferred form of farmer organisation. Similarly, in Ghana, the company Cadbury is investing in farmer capacity building, supporting the development of farmer marketing unions. In some places co-operatives may not be feasible or have a less than successful history. More evidence is required around the types of farmer organisation that enable standards to have a positive impact.

Bias in selection of participants and therefore bias as to who benefits from standards within a community can also be sources of community discontent (ITC, 2011b). From the literature cited by ITC (2011b) the evidence base for these claims are unclear, making generalisations impossible.

It should not be assumed that the social benefits of participating in standards are equal for men and women or between different social groups. There is insufficient attention to gender and gender-disaggregation in most of the impact studies reviewed by Nelson and Pound (2009). Although the promotion of gender equity is a requirement by FLO which sets standards for Fairtrade production the actual impacts are under-researched, leading to claims that 'the fair-trade network is falling far short of its goal to promote gender equity' (Lyon, 2008:258). Nelson and Pound (2009) found evidence of women benefiting from income generating opportunities under Fairtrade schemes. For example, Blakely (2005) studied three coffee co-operatives in Mexico and found that women's involvement in income generating activities had been boosted through involvement of the co-operative in Fairtrade. The San Fernando co-operative, for example, has had a fully functioning women's program since 1996 (two years after becoming Fairtrade certified), with six women's groups with memberships ranging from 15 to 50 women in operation. The co-operative organises capacity building and skills training activities for the groups to help women design and implement their own income generating activities and to thus help families when coffee prices are low. The cooperative is also helping the women's groups start a chocolate covered coffee bean business that will make the sweets available throughout Mexico (From Nelson and Pound, 2009). But the meta-review also concludes that there are risks in Fairtrade, as well as organic/Rainforest Alliance/Utz Certified standards, that these opportunities may act to increase women's workloads without challenging the entrenched underlying discrimination in household decision-making. Evidence from Guatemala and other countries in Latin America shows that traditional gender roles are reinforced in cooperatives and can even worsen conditions by creating structural limitations to women's participation in agricultural sector (Lyon, 2008). Furthermore women "cannot simply rely on a trickle-down effect of male income into the house-hold" (Lyon, 2008:260). There are other aspects to the distribution of impacts – positive and negative – of standard systems. The situation of on-farm hired labourers has been somewhat neglected in many studies of Fairtrade impact, but in a few where this topic was covered, strong positive impacts were not uncovered.

2.3.3 Environmental Impacts

In this section we provide an extensive discussion of findings on the environmental impacts of organic standards, as this is where the bulk of the literature focuses, followed by a shorter discussion of findings on Fairtrade and Rainforest Alliance and Utz.

2.3.3.1 Environmental impacts of organic standards:

Organic farming standards are based on principles of a "natural" production approach and therefore aim to address a wide range of environmental issues, although there is a degree of subjectivity in the prescriptions and what constitutes "organic" may vary from location to location. For example, copper sulphate, is organically certified in some circumstances, yet heavy-metal soil contamination can eventuate as its toxicity and its half-life in the soil can be much greater than synthetic pesticides. Nonetheless, on the whole, organic practices are often considered to be environmentally friendly as they involve largely "natural" processes for yield enhancement (e.g. rotations to maintain soil nitrogen, natural pest control etc). Assessing the impact of particular aspects of the standard can be tricky as the different parameters tend to interact with each other, with local farming practices and with local landscapes (Flohre, Fischer et al. 2011). For example, there is a well-studied relationship between habitat heterogeneity and farmland biodiversity (Benton, Vickery et al. 2003), and a large component of the benefits of organic farming for biodiversity arises through the promotion of spatial heterogeneity through rotations, mixed farming and non-synthetic inputs maintaining the quality of small patches of non-cropped habitat.

Organic farming is practiced across the world in a wide variety of agro-environmental and climate contexts, including temperate zones, so unlike the studies focusing on Fairtrade and Rainforest Alliance, much of the evidence base on impact originates from developed countries (Niggli et al, 2010) and so interpreting this for developing country or tropical contexts needs to be undertaken with care for agronomic and socio-economic reasons.

Studies on the environmental impacts of organic farming cover a range of areas such as the impacts on biodiversity, soil, climate, water, use of agro-chemicals. The biotic environment (often in interaction with the abiotic environment) collectively provides a range of services of use to society (e.g. via the production of food, fibre, fuel etc, by creating clean water, by providing flood control, and providing cultural services in terms of landscape look and the existence of biodiversity). Agriculture, therefore clearly has a large impact on ecosystem services and at multiple spatial scales (Foresight 2011).

The majority of studies of the impact of farming practices on the environment have focused on the farm scale, but it is important to consider many of these environmental impacts beyond the farm gate to consider landscape and broader macro level impacts (as introduced

above in 2.2.3). Assessment of on-farm effects necessarily gives only a partial picture of the farm's impact on the environment. To illustrate why this is the case, Didham et al (in press) examine the New Zealand dairy industry which produces 33% of the global dairy production. To meet demand, in recent decades the industry has begun to import feed, to the extent that 80% of feed is imported in 2009. This feed comprises 25-50% of total oil-palm feed produced worldwide (Palm Kernel Extracts, PKE) and supports the palm oil industry greatly, thereby contributing to deforestation (Didham et al, in press). Thus looking only on-site (at farming impacts in New Zealand in this case) can seriously underestimate the total system impacts. Considering an example concerning organic farming: many of the local (on-site) effects of organic farming arise because yields are, typically, traded off in favour of extensive farming methodologies. So, for example, organic farms have lower methane emissions typically because stocking densities are lower (see Niggli et al 2010), which also reduces soil compaction and improves soil hydrology (Sutherland et al 2011). However, if overall demand for food is growing, reducing per area yield implies more land is needed to meet demand, and conversion of this extra land to agriculture may have environmental impacts that offset local benefits (Benton, Dougill et al. 2011). Furthermore, just as a farm can have off-site impacts, the landscape in which a farm sits influences on-farm practices (and assessments of its environmental impact). Not considering landscape context creates biases in the literature (Bengtsson, Ahnstrom et al. 2005; Gabriel, Carver et al. 2009; Batary, Andras et al. 2011). The failure to consider location, scale and distant effects therefore limits its usefulness and highlights the need for more systematic research that considers environmental services and system impacts.

a) Biodiversity

Within the organic literature the local environmental impact is almost always positive (Hole et al, 2005; (Bengtsson, Ahnstrom et al. 2005). In a qualitative review of 76 studies Hole et al (2005) concluded that broadly speaking management practices of organic farming are beneficial for farmland wildlife and biodiversity. Though they also noted that it is difficult to prove and assess scale effects of environmental impacts of organic standards (Hole et al., 2005). Similarly (Bengtsson, Ahnstrom et al. 2005)'s meta-analysis included 66 studies comparing organic and conventional farming systems and found (1) "Organic farming usually increases species richness, having on average 30% higher species richness than conventional farming systems. However, the results were variable among studies, and 16% of them actually showed a negative effect of organic farming on species richness". (2) "Birds,

insects and plants usually showed an increased species richness in organic farming systems. However, the number of studies was low in most organism groups (range 2–19) and there was significant heterogeneity between studies. The effect of organic farming was largest in studies performed at the plot scale. In studies at the farm scale, when organic and conventional farms were matched according to landscape structure, the effect was significant but highly heterogeneous". (3) "Birds, insects and plants usually showed an increased species richness in organic farming systems. However, the number of studies was low in most organism groups (range 2–19) and there was significant heterogeneity between studies. The effect of organic farming was largest in studies performed at the plot scale. In studies at the farm scale, when organic and conventional farms were matched according to landscape structure, the effect was significant but highly heterogeneous." (all quotes from Abstract on p261). Part of the reason that farming practice is only a partial driver of on-farm biodiversity is that different places have different biotas, from which the on-farm biota is drawn. As organic farms tend to be clumped due to environmental and social drivers (Gabriel, Carver et al. 2009) unless "landscape effects" are properly controlled for there remains a strong potential for bias in the results of organic vs conventional comparisons, as indicated by (Bengtsson, Ahnstrom et al. 2005) (3rd quote above).

Due to the fact that different species interact with environmental variation at different scale makes the scale of analysis an important consideration in environmental impact assessments (Hole et al., 2005; Olf and Ritchie, 2002)(Bengtsson, Ahnstrom et al. 2005) – for any farming intervention though here we raise it for organic production. There is currently little consensus in what is the optimum scale for management of biodiversity and the ecosystem services it provides (Gabriel et al., 2010), as different species have different relationships at different scales. To date, the most comprehensive single study of the effects of organic farming on biodiversity is (Gabriel, Sait et al. 2010), where fields and farms were paired for 32 environmental variables, differing only in the management applied. This study showed that on average biodiversity increased on organic fields, relative to conventionally farmed fields (by about 12%), but it varied greatly between groups (with some increasing markedly, others decreasing). Furthermore, there were strong neighbourhood effects (such that if the proportion of organic farming in the landscape was high, biodiversity on-farm was higher than otherwise), as well as effects due to the specifics of the landscape. This study confirms earlier thinking: Shepherd et al (2003) note that if a large proportion of agricultural land was converted to organic, to meet demand, then the environmental impact at the macro-

scale would be uncertain. The "landscape affect" suggests that the environmental costs and benefits of extensive farming systems will vary with location, and there are now theoretical arguments to suggest the benefits will be most likely in certain landscape types (Concepción, Díaz et al. 2008; Kleijn, Rundlöf et al. 2011).

b) Soil

Soils are notably complex systems and function through the interplay between their constituents, in particular the interactions between the biotic components. Soil texture and the mineralogical basis of the inorganic constituents create the basic foundation and the physico-chemical properties of the soil system, whilst the soil biota is essentially the 'biological engine of the earth', ultimately fuelled by soil organic matter, and which drives many of the key processes which underpin the delivery of ecosystem goods and services which soils provide (Kibblewhite, Ritz et al. 2008). Given their complexity, their constitution and function is influenced by many properties. In principle, organic farming maintains soil function through the use of animal and "green" manure (adding carbon and nitrogen) and rotations allowing soils to recover from high-yielding crops. However, soil function is a complex combination of many different things and is heavily impacted by, for example, compaction due to mechanical use. On the one hand, compaction due to stock may be less as stocking densities are reduced (Niggli report, Sutherland et al in press) but on the other as tramlines are so important for a range of hydrological properties (and therefore leaching) (Deasy, Quinton et al. 2009), the greater mechanical passes made in some organic systems to control weeds (Gelfand, Snapp et al. 2010) has the potential to have a negative impact. In systems comparing soils under organic management, there are differences in the soil biota and function driven by different manuring practices, but these are outweighed by the disturbance effects of tillage systems (Kautz, Lopez-Fando et al. 2006).

Much of the literature reflects developed-world studies. In the developing world, soil organic matter can quickly be depleted, leading to a drop in yields. Organic farming, using only organic fertilisers, which may be in short supply due to low yields and the multiple uses of organic matter in subsistence communities, therefore may not produce sufficient yields to re-invest in soil biomass. In such cases, the optimal soil management may be mixing organic and synthetic fertilisers, rather than being organic (Ouédraogo, Mando et al. 2006)

Nonetheless, in general, the literature provides evidence to suggest that organic farms have more sustainable soil resources than conventional farms. However, these differences are reduced with a range of "conservation agricultural" practices such as "no till" or "low input" systems (Baguette and Hance 1995; Kladivko 2001; Kautz, Lopez-Fando et al. 2006): tillage method can have a greater impact than using different organic vs synthetic fertiliser (Overstreet, Hoyt et al. 2010) Thus, in an abstract case: an organic farm with ploughing and using green manure would have a very different environmental impact from an organic farm with minimum tillage and using manure. Furthermore a non-organic farm utilising conservation agricultural techniques (e.g. no till, low inputs) may show better metrics than either a "conventional" or an organic system (Gelfand, Snapp et al. 2010). In addition all the impacts will, in turn, be context-dependent (on soils, landscape etc), as well as perhaps varying with crop type grown.

c) Climate Change Mitigation²⁴

One of the issues concerning non-site effects is in the ability of agricultural land to store carbon and therefore mitigate climate change (Falloon, Smith et al. 2006). For example, Elbert *et al.*, (2009) estimate that the autotrophic micro-organisms in dryland soils absorb a petagram of carbon (1 billion metric tonnes) each year. Not only does this improve soil fertility, this amount of carbon removed from the atmosphere is valued at ca \$20 billion. However, as discussed above, the primary determinant of soil carbon dynamics (beyond physical properties) may be disturbance regimes rather than whether the fertiliser is organic or not (Kladivko 2001; Kautz, Lopez-Fando et al. 2006; Ouédraogo, Mando et al. 2006; Overstreet, Hoyt et al. 2010), as well as issues to do with slope, run-off and whether ploughing follows contours (Stevens, Quinton et al. 2009; Deasy, Quinton et al. 2010).

Furthermore, farm-scale life-cycle carbon accounting can show variable results in terms of the comparison of organic vs conventional agriculture, and therefore their contributions to greenhouse gas emissions. In general, carbon accounting can show positive impacts of organic farming on greenhouse gas (GHG) emissions (Niggli et al 2010). However, as with other studies, the comparison of "organic vs conventional" does not always account for scale, context and landscape effects. A recent study developed a full carbon-account for 17

²⁴ This section focuses on climate change mitigation rather than processes of climate change per se and does not cover the vast array of initiatives that are considering adaptation to climate change.

years of a corn-soybean rotation system in Michigan (Gelfand et al. 2010). This showed that the efficiency (the outputs per unit input) were almost identical for organic and conventional approaches. Although organic methods "saved" energy costs by not using synthetic fertiliser, they "spent more" on the greater mechanised costs of farming (for example requiring more passes with machinery during weed control and a winter cover crop of clover) (Gelfand, Snapp et al. 2010) . Both no-tillage and low input agriculture "out-performed" organic and conventional agriculture in this study. Another recent study addressed a range of crops in the UK and concluded: "Organically produced bread wheat needed about 80% of the energy of non-organic, while organic potatoes needed 13% more energy than non-organically produced ones. While pesticide use was always lower in organic production, other burdens were generally inconsistently higher or lower. Land occupation was always higher for organic production. Lower fertiliser use (and hence energy use) in organic systems is offset by more energy for fieldwork and lower yields."(Williams, Audsley et al. 2010). This study therefore concluded that depending on the currency (energy or CO₂e or land- or pesticide use) and the crop different answers could be obtained about whether an organic crop was more or less sustainable. This, along with where the system boundary is drawn, explains some of the contrasting conclusions from the life-cycle assessment literature (Gelfand, Snapp et al. 2010; Williams, Audsley et al. 2010; Cooper, Butler et al. 2011; Nemecek, Dubois et al. 2011; Nemecek, Huguenin-Elie et al. 2011; Leinonen, Williams et al. 2012; Leinonen, Williams et al. 2012).

d) Water

The Niggli report quotes an "in press" review (Schader and Stolze, 2010 (in press). 'Environmental performance of organic agriculture'. In: Boye, J.a.A., Y. (Ed.), Green Technologies in Food Production and Processing. Springer, New York) as the source of positive assessments of on-farm water usage associated with organic agriculture. Whilst this may indeed be the case, again, caution may be needed in a simple interpretation of on-farm studies. Water storage in the soil is associated with soil properties, soil cover and organic matter, soil compaction and water extraction (through e.g. plant transpiration). Thus, comparison of organic and conventional farming systems can be a matter of comparing apples and oranges otherwise the comparison becomes trivialised and superficial (for example, an organic mixed farm will have a positive water account when compared with an irrigated cereal farm in a different microclimatic zone: so associating this difference with the simple "organic" management may miss the contribution of a range of other drivers).

e) Use of agro-chemicals

The aims of organic agriculture are to eliminate synthetic ("non natural") chemicals that conventional agriculture uses for fertiliser and protection against pests and diseases. Not surprisingly therefore many studies have found significant differences in agro-chemical usage in contrasts, and resultingly the impacts on local biodiversity (Geiger, Berendse et al. 2010) and the diffuse pollution emanating from the farm (such as nitrogen runoff contributing to eutrophication of ground water).(Tilman, Fargione et al. 2001). Organic farming, with lower or zero inputs of synthetic products, does not however necessarily equate to a lower environmental impact. Manure or green fertiliser, if over-applied, can lead to eutrophication of water courses; and permitted organic chemical uses include some high-impact toxic chemicals such as copper and natural pyrethroids for pest control. Furthermore, organic methods of weed control (e.g. using flames or mechanical weeding) may require greater fuel use, contributing to GHG emissions (Gelfand, Snapp et al. 2010).

f) Use of land

The study in Lowland UK (Gabriel, Sait et al. 2010; Hodgson, Kunin et al. 2010) raises an important point. Given that food demand is growing, if areas move to less productive agriculture then it implies that the demand for food will need to be made up from elsewhere. If demand for food is inelastic then (in the European context at least) it is possible to get the required yield and more biodiversity from a landscape that is farmed intensively in part, and where some land is set aside specifically for nurturing wildlife, rather than farming the whole area organically (Hodgson, Kunin et al. 2010). This is the "Henry Ford solution": you get more of both yields and wildlife by specialising within the landscape, because natural- or semi-natural land, managed for wildlife, has greater biodiversity than extensively managed fields or plots; and also that intensively managed fields can produce greater yields than extensively managed ones. Thus, at least if demand is inelastic or growing, and at the landscape level, organic farming may be less sustainable than conventional farming because it requires more land and the ecological costs of land managed for production are almost always going to be large relative to some land being managed for wildlife (Green, Cornell et al. 2005; Foresight 2011; Godfray 2011; Phalan, Onial et al. 2011). To exemplify "the cost of extra land" argument at an even larger scale: if consumers' demand leads to more organic production in the EU, the total EU production of agricultural products would fall, leaving a shortfall in demand that will necessarily be filled by imports into the EU from regions such as

Asia and sub-Saharan Africa. To meet this increased demand from the EU, such areas would need to increase intensification or bring more land into production (at the same time as their own population growth is demanding greater production for local consumption). Furthermore, the EU is heavily regulated relative to other regions, so increasing intensification elsewhere may result in greater environmental damage than in it would in Europe; and, as biodiversity is typically greater in the warmer parts of the world, the environmental damage caused by an expansion of organic farming in Europe may be proportionately greater than the biodiversity protected in Europe. It has recently been estimated that if Europe increased the proportion of its land devoted to organic farming to 20%, then it is likely that >10 M ha, an area equivalent to the size of Portugal, would be needed from the developing world (von Witzke & Noleppa, 2010). Hence, European support of organic farming may conserve European environments, but only through the potential export (and amplification) of the environmental costs to elsewhere in the globe.

On the other hand, the adoption of voluntary environmental standards such as organic certification in the developing world can lead to better land management practices and reduce chemical inputs particularly in perennial crops such as coffee (Blackman and Naranjo 2010 with respect to Costa Rica). Whether this is a benefit of the farming practice per se, or the benefits of enhanced training and education of farmers, matters only in so far as if it is an educational benefit then the context-specificity argument may imply that benefits will vary with education levels of the farmers rather than the practices themselves.

Thus we would argue that whilst there are several positive impacts from organic farming, there is considerable evidence that suggests that from a broader sustainability perspective, these effects are less positive. As we noted above, many of the studies that consider land use, landscape, scale and distant effects have been conducted in temperate countries, and often with commodities other than those for which organic is popular in tropical countries. It is therefore be important to consider the replication of these evaluation methodologies in such contexts.

2.3.3.2 Environmental impacts of Fairtrade

Assessments of the environmental impacts of Fairtrade have been fairly weak: the review by Nelson and Pound (2009) found a focus on changes in farming practices rather than any

studies of actual environmental impacts in Fairtrade. However, the review by Kennedy for the Rainforest Alliance (2011) which identified rigorous studies of specific best management practices and their environmental impacts, did find a higher number of longer-term studies on actual impacts of particular practices than expected.

Fairtrade which initially sought to improve socio-economic conditions for farmers in developing countries, has over time expanded its criteria to include more than a cursory reference to environmental issues. Fairtrade does refer the following practices that have an environmental focus (Nelson and Pound, 2009: 17).

- Minimised and safe use of agrochemicals
- Proper and safe management of waste
- Maintenance of soil fertility and water resources
- Prohibits use of genetically modified organisms
- Requires organisations to assess their environmental impact and develop plans to mitigate it.

This limited focus on the environment has been extended to impact studies. In their review of impact studies, Nelson and Pound noted that:

‘ of the 33 case studies reviewed, although approximately three quarters of these make significant comment on environmental aspects of Fairtrade, *none* of the papers carried a methodical environmental assessment (Nelson and Pound (2009: 17).

Moreover, much of the evidence base is limited to coffee and Latin America.

Directly attributing environmental improvements with Fairtrade is difficult due to a limited evidence base. Attribution is also made difficult since many of the farmer groups that are considered in studies that refer to Fairtrade are also certified to organic standards, or where the Fairtrade price and other support has provided a means to secure organic certification, for example Mexican coffee producers (Jaffee, 2007; Murray et al, 2003).

Some of the environmental impacts of Fairtrade may not be directly attributable to the standard criteria per se but to other aspects of the standard system, in particular environmental improvements which have been funded through the Fairtrade premium,

including organic conversion as noted above, integrated pest and soil management, the promotion of fuel-efficient stoves and biodiversity conservation. However, these positive on-site assessments are methodologically biased in the same way as discussed above for organic farming. Nelson and Pound (2009) highlight the fact that the impacts of such investments have not been studied.

A key point for future research is the economic and social implications of environmental criteria. It has been noted that Fairtrade environmental conditions can be 'too stringent' or 'locally inappropriate', for example creating excessive labour demands (Nelson and Pound 2009: 18).

2.3.3.3 Environmental impacts of SAN/Rainforest Alliance

Rainforest Alliance standards are more focused on environmental impacts than Fairtrade, given that they are rooted in attempts to conserve the natural environment through more environmentally friendly practices. Studies reviewed by Niggli et al (2010) highlight that the SAN/RA standards focus on the ecological functions, ensured through shade, efforts to protect biodiversity, limiting the use of agrochemicals, waste management, soils and forest conservation. However, as Niggli et al (2010) point out, the evidence that the standard avoids forest destruction due to increased productivity via input intensification is only anecdotal. However, the standard system does reduce the use of agrochemicals. Overall, the evidence base for the environmental impacts of Rainforest Alliance standards is small as studies have tended not to focus on SAN/RA until relatively recently and several studies combine SAN/RA with consideration of other standards. Where evidence does exist it focuses on Latin America and coffee. More systematic research is needed that goes beyond observing practices to measuring changes with respect to environmental and ecological indicators.

2.3.3.4 Environmental impacts of Utz Certified

For the UTZ Certified standard, the evidence on actual environmental impacts is even smaller with no clear indication of positive environmental impacts or rather insufficient evidence to draw meaningful conclusions, according to Niggli et al (2010). A similar finding was made by Chan and Pound (2009). There is a large gap in the evidence base with respect to Utz on environmental impacts.

2.4 Assessing impact and sustainability

As outlined above, the complexity of assessing whether an intervention (e.g. a certification scheme) is contributing to environmental sustainability, and if so how, is a very live research area. It is thus unlikely that an impact assessment on a product-by-product basis can address the issue of *sensu stricto* increases in sustainability. However, this calls for a greater degree of awareness of what impact assessments can actually assess. Hence, a scheme that makes reference to reduction in pesticide usage as an environmental benefit, also ought to acknowledge that a greater carbon footprint may be an outcome as more land will be used and more yield lost to pests. Similarly, organic chickens may grow more slowly, live for longer and consume significantly more food per unit weight, contributing to higher carbon footprint and a negative environmental effects (Leinonen, Williams et al. 2012).

Standard systems are starting to recognise the complexity of assessing environmental impacts beyond the farm, for example thinking about indicators on environmental services. It is important that this work is continued, extended and supported.

Section 3: Relative effectiveness of certification systems

3.1 Introduction

In this section we take the consideration of impact of standard systems further by considering how standards systems perform relative to each other, and also situate the discussion of standards in the context of broader governance of sustainability at the government level and also the context of the value chain, asking whether it is standards that lead to particular changes or other interventions.

The impact of increasing standards on public governance and other institutional structures is an area for further research. For this type of research it would be important to distinguish the role of different levels of government and other parts of the public sector, for example the role of local authorities and councils as well as central government as well as how standards systems relate to other forms of value chain intervention.

Nonetheless, there are some comparisons of the relative effectiveness of different standards. Some of the methodological challenges that we have outlined in section 2 are of particular relevance when attempting to compare between standards. In this section we outline what we understand to be the latest attempts at such comparisons. In section 3.3 and 3.4 we consider how standards relate to regulation and also to value chain interventions.

3.2 Relative effectiveness of different standard systems

As explained in section 2.2 there are several difficulties in comparing between standard systems – not least the fact that they have differing primary objectives. The ISEAL Code of Good Practice on Assessing the Impacts of Social and Environmental Standards Systems illustrates how the various standards have come together to produce a broad set of sustainability indicators. Different standard systems can then pick from the list they present and which are of most relevance to them – in order to select indicators they will try to measure. Note, though, that the list does not address some of the critiques of sustainability metrics and the scale at which they are measured, which have been outlined earlier. The list is as follows:

Social	
Labour Rights	Rights associated with conditions of work, conditions of employment and worker empowerment, as enshrined in the ILO Declaration on Fundamental Principles and Rights at Work
Gender Rights	Access to opportunities and empowerment of girls and women, as well as the reduction of discrimination and inequalities based on gender
Cultural Rights	Indigenous and minority rights and empowerment, including respect for self-determination, intellectual property, benefit sharing and religious tolerance
Social Services	Access to education, health care, clean water, food security and housing
Environmental	
Water	Marine and fresh water conservation and quality, including protection from pollution
Soil	Maintenance of organic matter and biological activity, including prevention of erosion and pollution
Biodiversity	Biodiversity conservation at the genetic, species and ecosystems levels
Energy	Efficient energy use, including reduction in total use and increased use of renewable energy
Carbon	Mitigation and sequestration of greenhouse gas emissions and increased resilience and adaptation capacity of people, their livelihoods and ecosystems to climate change
Natural Resources	Efficient management of natural resources from production to post-consumption, including integrity of ecosystem services, sustainable levels of harvesting and extraction and reduction and effective management of waste
Economic	
Income	Provision of a minimum wage or access to a living wage
Enterprise Resilience	Assurance of self-reliance and ability to counter risk through economic diversification, access to finance and increased productivity and quality
Value Chains	Fairness and responsibility toward all actors in a value chain, including equitable trading relationships

Table 3.1 From the ISEAL Code, 2010

Because the different standards have different objectives it can be difficult to compare them directly, but they can theoretically be compared on indicators to which they subscribe (if the methodological framework of measurement is comparable). It can also be difficult in some contexts, such as the tea industry in Kenya, to find organisations that only have one certification. Many organisations already have or are seeking multiple certifications in order to increase their market access. In longitudinal studies this can present a particular problem, because a sample may be constructed but then organisations representing a particular standard certification (e.g. Fairtrade) may also obtain another certificate (e.g. Rainforest Alliance) during the course of the study – thus undermining any possible comparative analysis on the basis of one standard's impact compared to the next. It is also

important to remember that a comparison of effectiveness and impact in one situation may not be the outcome in another context at another time – because contextual factors such as global markets, national institutions, rural socio-economic dynamics, changes in the standards themselves etc may all have a bearing. Moreover, it can be difficult to capture baseline data – when a certification is first introduced and when many changes to achieve compliance, and capacity building support is given. This is because unlike development project interventions, standard systems are available for producers and estates to apply to at any time.

Because the standards have existed or been in operation for different amounts of time and have originated in different parts of the world, many have geographical areas of focus: their development has clustered in particular regions and in particular commodities. So for example RA certifications developed in Latin America long before they began in Africa. Fairtrade began as a solidarity movement with Latin American coffee producers. Utz Certified is a relatively recent standard that sought to draw of the experience of the GlobalGAP approach (comment on the others, FSC coverage etc). Although, all of these initiatives standards are regularly developing new standards for new products, it is also the case that they have more coverage in coffee, cocoa, tea etc

In developing the sampling framework for the NRI longitudinal study on standard impact that is currently being funded by DFID, which includes both Rainforest Alliance and Fairtrade certified producer groups and estates, an attempt was made to map the location of all currently certified producer groups. It was difficult to develop the matrix due to a lack of information held by the standard bodies. A further challenge emerged in developing a sample where different certifications could be found in the same location- which is important for comparability – because there were very few locations in the same part of a country where there are producer groups with Utz, RA and FT certification. This can also be difficult when commodities are produced in both hired labour and smallholder situations: actually finding the producer groups or estates in the same location as potential comparators is extremely difficult, not least when other researchers are already working or planning to work with some of the sample.

There are relatively few comprehensive comparisons in the sense of impact assessment, partly because of the methodological challenges outlined above, but also because this type of inter-standard comparison has, understandably, not been the priority of the standard bodies themselves that are more interested in improving their own performance and are in fact competing with each other in the market for legitimacy (Smith and Fishlein 2010).

Niggli et al (2010) includes a summary of ten reviews that compare standards – but most of these are comparing the standards from a theoretical position, i.e. mapping the provisions in their standards, rather drawing on empirical data . A recent Comic Relief study (2011) reviews some recent and upcoming comparative analyses. See table 3.1 below.

Table 3.1: Reviewing comparative studies of standards impact

Nicaraguan coffee sector (Ruben and Zuniga, 2011).

A study comparing groups of producers with similar characteristics (farm size, agro-ecological conditions, etc.) but varying according to their involvement in Fairtrade, Rainforest Alliance (RA), Starbucks Café Practices (SCP) or no scheme, and whether they were producing organic or conventional coffee. Fairtrade producers received higher prices, had more access to credit than independent producers, but have lower yields and higher input and labour costs than all other farmers. RA and SCP farmers had the highest quality and yields as they were more likely to apply Good Agricultural Practices (GAP) in managing production and processing, which enabled them to sell more coffee at premium prices and thereby receive higher net returns than Fairtrade producers. Fairtrade performs well compared to independent and SCP in terms of producers identification and satisfaction with their cooperatives, these effects were even stronger for RA farmers and Fairtrade farmers did not exhibit strong loyalty to their cooperatives (side selling is common). This led to the conclusion that, although Fairtrade can be useful in terms of supporting initial access to premium markets, other labels may provide better incentives (particularly in terms of price) and support for yield improvements and quality upgrading which may be more important in the current context of quality differentiation in the coffee sector.

Fairtrade-organic and UTZ Certified-organic coffee farmers in Uganda. Riisgaard, et al, 2009)

Fairtrade-organic farmers had higher yields and received higher prices than UTZ-organic farmers, although their net revenue was not significantly higher because of higher labour costs. However, the difference in labour costs was largely attributed to having smaller households, which suggests that full economic costing of family labour may have produced different results. While both groups reported higher revenues since joining their respective schemes as a result of higher prices and being able to bulk their sales, many Fairtrade-organic farmers also attributed this to improvements in quality. The Fairtrade-organic farmers were members of the Gumutindo cooperative which was established with the aim of producing quality coffee for Fairtrade markets and has received considerable external support to do so; much of this support has been provided by the ATO Twin Trading, funded by end buyer Cafédirect. This suggests that involvement in Fairtrade can, under certain conditions, contribute to greater improvements in agricultural practices than other schemes (i.e. where additional support for producers is provided).

The study by Riisgaard et al also involved qualitative research with Fairtrade, Rainforest Alliance and UTZ certified tea and coffee producers in Uganda and Tanzania to assess the comparative advantages of each scheme from the perspective of producers.

Farmers in all schemes reported marked improvements in incomes, farm management and support services received, which compared favourably to the situation of non-participant farmers in these sectors/ countries given the poor state of public extension services and private input markets. Other differences in the benefits reported related largely to differences

in the emphases of the schemes. For example, training and enforcement with RA farmers had more focus on wildlife and biodiversity conservation compared to UTZ farmers where there was more focus on household sanitation and pre- and post-harvest handling. Similarly, impacts for women depended on how gender was treated by each scheme, with Fairtrade putting more emphasis on women's participation and representation in farmer organisations while UTZ farmers reported impacts from training on empowerment and RA farmers talked about increased interactions between female farmers. But overall the study found less difference between the schemes than might have been predicted.

COSA

The first study published by COSA (2008) compares the performance of 50 coffee farms of all sizes in Kenya, Costa Rica, Honduras and Nicaragua with Fairtrade, Organic, UTZ Certified or Rainforest Alliance certification and compared them with comparable farms without certification. It found considerable variation in performance on social, economic and environmental indicators, with effectiveness heavily influenced by the manner in which schemes were implemented and enforced locally. Although certified farms were generally better off economically than their conventional counterparts, the gap was sometimes narrow and only 54 percent reported improved market access due to certification. Certified farms performed better than conventional farms on occupational health and safety; employee relations and labour rights; environmental management systems were also better, but this had not yet translated into biodiversity and soil health. The study did not, however, specify findings for any particular scheme and it also stressed that findings cannot be generalized given the small sample.

Source: Summarised from Smith, S (2011)

3.3. Private standards compared to regulation

In this section we present our understanding of current knowledge on the use of private standards to deal with environmental and social issues in agricultural production and the supply chain compared to regulatory approaches, that comparing market and regulatory approaches. . There is a relatively small amount of empirical work in this area especially as opposed to conceptual literature. From a conceptual or theoretical angle, there has been is a huge amount written on the governance effects of private standards from early in the 2000s, exploring the way in which private standards may replace or substitute for public regulation (e.g. Haufler, 2001; O'Rourke, 2003). However whilst there are several interesting case studies of the emergence of private standards operating at a variety of scales and their relationship with government regulation (both in soft or hard regulatory context), there is little that compares private standards with other options. This is because of the complex nexus between private and public approaches, as well as challenges in approaching this empirically.

As we have noted above, the growth of private standards is associated with governance gaps, where the private sector has sought to co-ordinate product attributes and production processes through the use of standards, often to mitigate risk as regulations have been

lacking. This may be as a result of capacity gaps and the slow pace of legislative change, especially in a developing country context (Dasgupta 2000) or as a result of policies to de-regulate or creation of a soft regulatory framework. A soft regulatory framework can be contrasted with a hard framework which is based on legislation, compulsion and penalties. Soft regulation tends to take ‘the form of recommendations, or opinions, or statement....[it] often provides for multiple interpretations of processes’ and enforcement is not through direct sanctions, rather ‘moral suasion, monitoring and feedback, transparency, peer group audits, bench-marking’ etc (Kuruvilla and Verma, 2006: 19-20).

In some spheres, government, particularly the EU, has intentionally backed away from standard setting and detailed involvement in specifying what should and not be done, focusing more on desired outcomes, letting business determine the means (Ponte et al 2011: 8). Soft legislation is increasingly becoming the dominant approach to labour rights (Kuruvilla and Verma, 2006). Where private standards and approaches are a means to compliance with soft regulation, this is seen as ‘re-articulated regulation’ by Utting (2008) in which the standards and regulations are not ordered hierarchically but are more negotiated. Of the standards we are considering in this report, GlobalGAP is perhaps the one in which we see ‘re-articulated regulation’, a situation in which the standard is not a substitute for government regulation (in this case on food safety), rather a means to ensure that government regulations are adhered to along the supply chain. However, as we see below, other agriculture standards are being used by government to promote their objectives.

Box 3.1 GlobalGAP

GlobalGAP, formerly EurepGAP, was established in 1996 as an initiative by retailers belonging to the Euro-Retailer Fresh Produce Working Group (EUREP) to develop standards for Good Agricultural Practice (GAP). It was a response to consumer concerns and European legislation on food safety that placed duties on retailers with respect to their supply chains. Systems such as GlobalGAP are an effort to demonstrate that a retailer has put in place appropriate precautions to ensure that safe food is delivered to the consumer. For UK retailers in particular it is hoped that improved systems for GAP all along the supply chain would offer a due diligence defence for retailers under the UK Food Safety Act 1990. In particular European markets, notably the UK, Netherlands and Switzerland certification according to GlobalGAP has become the minimum requirement for producers wishing to sell through the multiple retailers and retailers outside of Europe have recently become members.

Source: Tallontire et al, 2011

Henson and Humphrey (2010) suggest that there is not a simple dichotomy between private standards and public regulation. They propose this typology of standards (2010: 1630):

- “Public, mandatory standards: more accurately termed ‘regulations’.
- Public voluntary standards: standards that are created by public bodies but whose adoption is voluntary.
- Legally-mandated private standards: standards developed by the private sector which are then made mandatory by public bodies.
- Voluntary private standards: standards developed and adopted by private bodies.”

This typology provides a useful framework for identifying how private standards may go on to influence government, or more particularly which private standards may be adopted by government (which would be a key indicator of broader impact). However, it may be more complex than this in that a particular government objective may be furthered by a mixture of mandatory and voluntary standards, particularly in food safety (Havinga 2006). Rather than comparing the relative effectiveness of government and voluntary approaches, a more useful question may be to think about how private standards and certification have influenced government and how government uses these approaches.

The most in-depth study of these questions comes from a joint study by the Trade Standards Practitioners’ Network and ISEAL by Carey and Guttenstein (2008). This report highlights how government and private approaches support each other, they argue there is ‘substantive evidence that there is extensive interaction between voluntary standards and public bodies....., in just six months, the project came across more than seventy examples of governmental use of voluntary standards’ (2008: 12). Carey and Guttenstein (2008) give examples of nine governments that work in tandem with voluntary standards, or use them as part of their policies. They argue that private standards do not necessarily push out public and that in some cases the introduction of private standards from abroad may lead to improved regulatory practices. They provide examples of how a) government may use private standards, e.g. Netherlands use of Fairtrade in procurement contracts (an example of Henson and Humphrey’s legally-mandated private standard); how government may support private standards (e.g. Tunisia’s membership of IFOAM) or c) how government may facilitate the development of a private standard. In the latter case they highlight how the Kenyan government helped facilitate the development of KenyaGAP, the Kenyan version of GlobalGAP to which it was benchmarked in 2007. This case bears more critical examination as KenyaGAP was as much a product of donor investment as government interest, and also it should be noticed that no company has ever been audited against this standard as exporters have chosen to continue using the original GlobalGAP standard (Tallontire et al, 2011). What is perhaps more interesting is that in 2007 the Kenya Bureau of Standards developed an agreement with both the Fresh Produce Exporters Association of Kenya

(FPEAK) and the Kenya Flower Council (KFC) that the exporters associations will monitor quality and collect a levy on its behalf, especially so since previously the government has had a hands-off attitude to the sector which has been self-regulating.

This is an area ripe for more detailed investigation, especially in the context of dynamic standards emerging at multiple scales.

3.4 Standards and value chain interventions

Standards are considered a key form of value chain governance, often 'governance at a distance' (Gibbon and Ponte 2005), which enable lead buyers to co-ordinate production and marketing by actors further up the supply chain. However, standards are not the only tool that may be adopted, and in several cases, significant improvements in quality, logistical efficiency and community and environmental benefits have resulted from other forms of value chain intervention. Or in other cases, it is award of a label or a certification is achieved following a significant programme of investment in 'upgrading'. So, it may be questioned whether the standard is the tool that delivers the benefits that are often reported, or rather other interventions to upgrade, as we have noted in section 2.1 with regards to causality. Though of course, in many cases, standards and certification play the role of catalyst in bringing key actors together and provide a common framework, and then technical assistance can be provided. This convening and dialogic capacity of multi-stakeholder standards has been what has attracted attention not only of practitioners but of scholars interested in non-governmental forms of governance as a mechanism to promote more sustainable forms of development (Tallontire 2007).

There is a burgeoning literature on value chain upgrading and developing value chain linkages for smallholders in the context of export-led agricultural development, particularly emanating from multilateral donors and development agencies. In contrast, this topic has had relatively little coverage in the peer reviewed literature from the perspective of social and environmental aspects, with the important exception of articles from the Danish Institute for International Studies (DIIS) commissioned by IDRC (e.g. Bolwig et al, 2010) which explore how environmental and social issues can be better integrated into value chain development. The DIIS team highlight that value chains may incorporate smallholders on unfavourable terms as much as offering greater opportunities and also provide a framework that combines 'vertical' (the value chain analysis) and 'horizontal' (the poverty and household analysis)

elements, filling a gap in the literature which has focused either on one or the other.²⁵ A report from IIED which asks “Under what condition are value chains effective tools for pro-poor development?” draws on this study and also insights from recent report by Oxfam (Bright et al, 2010) to explore ‘Strategies for leveraging a market access opportunity to increase development impact’ of which certification is but one, see Table 3.3.

In this overview of strategy, certification itself only features as a distinct item as a subcategory of one of four strategies. However, this is a misreading given that different aspects of standards systems are important under several of the headings, including ‘fair transparent governance’ and due to the fact that many standards require an effective market linkage in order to certify the producer and that ‘internal lead firm approaches’ superficially refer to particular standards or indeed have strategic partnerships with leading standards bodies (e.g. Unilever working with Rainforest Alliance on Lipton’s tea).. Nevertheless, this discussion of how small farmers can benefit from value chains highlights the complexity and inter-connectedness of the challenge, particularly how certification itself is not going to ensure that small farmers are integrated into value chains on a favourable basis.

Whilst a number of impact studies have sought to isolate the effects of capacity building and other interventions, this has not been done systematically and with a good understanding of how the relative significance of certification as a tool for intervention. Useful data for case studies of the relative importance of certification compared to other value chain interventions would be the projects funded through the FRICH scheme. FRICH (Food Retail Industry Challenge Fund) is an initiative from DFID aims to ‘makes funding available for grants for partnerships that bring UK retailers and African farmers together’²⁶ A number of the funded projects include certification with Rainforest or Fairtrade as part of a more integrated development intervention led by lead buyers in the private sector (see Table 3.4).

Our discussion of the initiatives of chocolate companies in section 1 raises similar issues of the relative importance of certification in supply chain development.

²⁵ There is of course, significant peer reviewed literature exploring value chains and smallholders from a more economic development perspective, e.g. Reardon et al (2001) and Reardon et al 2004.

²⁶ <http://www.dfid.gov.uk/work-with-us/funding-opportunities/business/frich/>

Table 3.3 Value Chain Strategies for Pro-Poor Development

Strategy	Sub-themes
(1) Investing in upgrading to meet production and processing requirements;	Investments to: <ul style="list-style-type: none"> • Upgrade producer skills, producer organizations and intermediaries to meet the requirements of the market (quality, consistency, production standards, processing capacity, infrastructure and the like); • Utilize existing assets and invest as needed to ensure that the poor are able to participate in a beneficial way and enhance the rewards and/or reduce exposure to risks of chain participation (increasing productivity, increasing producer business and sustainable farming skills, increasing business capacity of the intermediary and more).
(2) Adapting trading relationships and supply chain structure for smallholder sourcing;	<ul style="list-style-type: none"> • Supply chain co-ordination • Effective market linkages • Fair and transparent governance • Sharing of costs and risks • Equitable access to services
(3) Adapting the product proposition and buying practices of the lead firm;	<ul style="list-style-type: none"> • Certification as a value proposition (e.g. Rainforest, Fairtrade, Utz etc) • Internal lead firm approaches (e.g. company commitments to sourcing from sustainable sources)
4) Investing in broader sustainable livelihood strategies	<ul style="list-style-type: none"> • Recognising the complexity of multiple dimensions of poverty • Supporting market diversification • General asset investments • Service input businesses • Women's economic leadership • Developing organisational models

Source: Adapted from selected excerpts from Seville et al (2011: 25-

3.5 Summary

As we have noted in section 2 there have been considerable developments in the methodologies to assess the impact of standards with particular reference to the agriculture sector. However, there remains considerable work to be done to assess how standards

interact with other mechanisms for improving social and environmental impacts and practices, including government hard and soft regulation and other value chain interventions. This will require the development of new methodological frameworks as well as better understanding of current trends. Moreover, this needs to be set in the context of the grand challenges facing the globe in terms of climate change and food security, which the literatures we have discussed in this section have not engaged with in a concerted way.

Table 3.4 Frich projects involving certification

Partners	Suppliers	Product	Label
Sainsbury's, Finlays, Twin	Farmer co-operatives: Sopacdi in the Democratic Republic of Congo; and Mzuzu in Malawi	Coffee	Fairtrade
Finlay, Fairtrade The Co-operative College, the Kenya Cooperative College and Africa Now	Small-scale tea farmers in Kericho, South-West Kenya.	Tea	Fairtrade
Cafedirect with UK-based Fairorganics Solution, local partners – Imani Development and Zatona Adil	São Tomé and Príncipe cocoa growers and Green tea from Rwanda	Cocoa and tea	Fairtrade
Waitrose with key importers/wholesalers	All suppliers	Fresh produce (fruit and vegetables)	LEAF Marque
Bettys and Taylors of Harrogate with OCIR Thé (The Rwandan national tea authority), the factory owners, the Rainforest Alliance	Rwanda	tea	Rainforest Alliance

Source: adapted from DFID website: <http://www.dfid.gov.uk/work-with-us/funding-opportunities/business/frich/projects/>

Section 4: What is known about the communication of standards to the public?

4.1 Introduction

In this section we briefly review material on the communication of standards to the public. A key issue is the level of awareness of standards and how this translates to purchases of labeled products. The way in which standards are communicated to the public differs considerably according to whether the standard has a consumer facing label or not. Some standards are essentially business to business certification schemes, the key example being GlobalGAP. However others may not have a consumer label on the product but may have a logo which is promoted to the public, such as RTRS. Table 4.1 indicates which of the standards covered in this study use labels or not.

Table 4.1 How the standards approach labelling.

	Consumer label/ B2B
Organic	Consumer labels have proliferated for many years, with different labeling initiatives targeting particular consuming countries.
GLOBALGAP	Business to business standard of which consumers have little awareness
Fairtrade	Consumer label since 1988 in Netherlands and early 1990s elsewhere in Europe
SAN/RA	First certification of agricultural products in early 1990s with bananas, then coffee
Utz Certified	Consumer label – Utz plus the addition of “Good Inside”
Roundtable on Sustainable Palm Oil (RSPO)	Certification on a business to business basis since 2008. Consumer labelling announced in November 2010 and launched 1 June 2011. No product certification information
Roundtable on Responsible Soy (RTRS)	Business to business certification, with first certificates in June 2011.

Beyond the label, the initiatives covered in this report all have websites. However, as noted by Potts et al. (2010), the depth of information available online varies immensely by organization. Most have information about the content of the standard and the governance structure, with at least information about board members and conferences or information sharing events. There tends to be less detail about the mechanics of certification, and as Potts et al (2010) note ‘almost none of the initiatives reported providing online access to complaints, dispute resolution and/ or board minutes’. This is important information for

producers and for NGOs, but whether this is of interest to the consumer is a moot point and is worth researching.

4.2 Consumer awareness of standards

The study by Niggli et al (2010) provides a useful summary of the available data on the communication of standards to the public and their effectiveness. We discuss some selected data from this study here and add to it where possible, but current knowledge on the consumption of labeled products is patchy and largely dependent on commercial opinion polls. We have identified very little academic or peer reviewed material on the topic, though we are aware there is some coverage mention of consumer awareness of Fairtrade and organic standards in some sustainable and ethical consumption literature (see section 1 above). To a certain extent this is due to the very recent emergence of consumer labels for some standards (specifically RSPO) but also to the general nature of much academic work on ethical consumption or where labels have been a focus the discussion has been around eco-labels rather than supply chain standards (see for example Young et al, 2010), perhaps with the exception of Fairtrade.

Organic labels and international Fairtrade mark are probably the most widely recognized of the certifications that are covered in this study, with the Fairtrade mark the single most widely recognized label. FLO claims that 'recent consumer surveys across 24 countries show that almost 6 in 10 people have seen the international FAIRTRADE Mark and recognition exceeds 85 percent in some markets.'²⁷ Evidently this varies considerably across countries. In the USA there is relatively low awareness of Fairtrade compared to Europe (44% in the USA), but awareness of the USDA's organic label is 75% (Rainforest Alliance 2010, Source: Natural Marketing Institute's 2009 Consumer Trends Database). Interestingly, awareness of Rainforest Alliance label in the USA is lower than both organic and Fairtrade at 35% despite it being an initiative with origins in the USA. In the UK consumer awareness of Rainforest Alliance has doubled from 2008 to 2009, from 22% to 44% (Rainforest Alliance 2010). This appears to be associated presence of the label on leading tea brands and advertising campaigns (e.g. Unilever's PG Tips).

Awareness of the Fairtrade mark has expanded significantly in the UK over the past few years, as can be seen in Table 4.2.

²⁷ <http://www.fairtrade.net/897.0.html>

Table 4.2 Awareness of FT in the UK

	Recognise the FAIRTRADE Mark	Recognise the concept	Survey (if provided)
2008	70%	64%	TNS CAPI Omnibus
2007	57%	53%	TNS Omnimas survey
2005	50%		
2004	39%		
2003	25%		
2002	20%		

Source: Compiled from data on Fairtrade Foundation website,
http://www.fairtrade.org.uk/what_is_fairtrade/facts_and_figures.aspx

Note: Recognised the concept means 'linking the Mark to a better deal for producers in the developing world'

The increased awareness of the Fairtrade mark in the UK could be related to a number of inter-related trends, such as:

- Location-based initiatives based on consumer and activist networks, e.g. Fairtrade Towns, universities and workplaces (Malpass et al 2007; Townley, 2009);
- Public procurement favouring Fairtrade certification (Smith, A 2011);
- Decisions by retailers and brands to source exclusively from Fairtrade sources (Smith 2010);
- Promotion by retailers of their association with Fairtrade (e.g. 'We sell the most Fairtrade products' etc) (various websites and advertising campaigns).

There is some academic work emerging that has explored some of these trends, but we are not aware of specific empirical efforts to unpack which factors have led to the reported levels of awareness or indeed to the growth in the sales of Fairtrade marked products. More in-depth examination of the growth of Fairtrade UK market would be useful in terms of identifying lessons for other markets and initiatives, as we discuss below.

There is general academic literature on awareness of 'ethical' products and consumption which suggest a link between ethical claims and consumer decisions. Auger et al (2010) used a multi-cue, multi product design in a range of developed and emerging economies and show for claims on labour conditions and environmental issues that:

- Ethical claims are attributes are generally more influential in developed than in emerging economies;

- The importance of social attributes holds across high and low involvement products;
- Social attributes can influence product choice even when other intangible attributes are included in the design;

(from summary by Niggli et al, 2010).

The ethical consumption literature is evolving to build on and improve on the methodologically weak findings and conclusions from consumer surveys. As noted in section 1, there is frequently what is known as the attitude-behaviour gap. Researchers are slowly unpacking the fallacy that more information and awareness leads simply to more consumption of ethical or labelled products. Consumption is not just about rational economic behaviour, it is mediated by social processes (including group membership) and by day to day practices of consumption. To make a simple dichotomy, sociologists highlight the context of consumption (or more specifically sustainable consumption practices) compared to the focus on decision-making and information favoured by the psychological behaviourists and economists who have dominated the field to date (Middlemiss, 2010).

A useful framework to consider more empirical work on the link between promotional activity and ethical consumption has been developed by Schuler and Christmann (2011). Their paper, based on a critical reading of academic literature, hypothesizes that communication with the public strongly affect actual outcomes of standards, as it drives purchasing behaviour, and thus the quantity of social (/environmental) benefits. Their research suggests that the relationship between promotion (e.g. through the label and other activities including websites, advertising in print media, in-store information, press releases and event sponsorship) is mediated by other factors such as credibility and the price premium which are both associated with the stringency and enforcement of the standard requirements.

Stringency and enforcement of a standard and the effect on consumption have two competing effects. Schuler and Christmann (2011) suggest that where stringent and well-enforced standards lead to higher costs and thus depress demand for the certified product, however stringent and well-enforced standards 'standards elevates the credibility of a governance scheme in the eyes of consumers which should lead to an increase in demand'. The balance between demand depressing and enhancing effects is argued to differ between consumers with high and low 'involvement'. If Fairtrade (or other labels) are to expand further into mainstream markets characterised by more 'low involvement' or other consumers who are less likely to pay a premium or pay attention to detailed explanation of standards on websites and reports, more effort, they argue, should be put into 'promotional schemes',

perhaps including celebrity endorsement (2011: 150). Given that this paper is based on a conceptual model, it is not surprising therefore that Schuler and Christman call for 'Empirical research on the effects of design and promotion of market-based social standards on consumer behavior'. Key questions that they pose for future research are set out in Box 4.1

Box 4.1 Some suggested research questions

Empirical research questions proposed include:

- Which specific promotion activities or combination of activities are most effective in reaching different types of customers?
- Do consumers favor socially-labeled products more if they are promoted one way over another?
- How do promotion activities affect customers' willingness to pay for products with social attributes? What are the differences across types of customers in the effects of different promotion activities on their purchases?
- Which types of promotions raise (or lower) a consumer's perceptions of credibility?

Source: Schuler and Christmann (2011:151)

As noted above, it would be useful to identify useful case studies through which to trace the impact pathways from promotion and other interventions to consumer demand. The questions in box 4.1 would need to be framed in such a way that recognized findings from other research on ethical consumption, such as:

- Ethical consumers are not all alike, different consumers make decisions in different ways and react differently to messages from companies about the ethical credentials of products (Shaw and Shiu, 2003; Langland 1998; Schuler and Christmann, 2011); the key variables not being related to socio-demographic characteristics but levels of 'involvement' or 'association' with the issue.
- How consumers become involved or not, recognizing that 'responsible consumerism is not *discovered* but has to be *co-created* by corporations' (Smith et al , 2010: 631).

Section 5: Synthesis, gaps and a research agenda.

In this report we have brought together a lot of diverse evidence about production and market trends in certification schemes, an assessment of the extent to which standards are contributing to environmental, social and economic sustainability, a discussion of their relationship to other tools, finishing with a discussion of public awareness and communication issues. This review covers a considerable amount of ground, with a considerable diversity of issues, disciplinary perspectives and approaches.

In our final section we draw together key issues for future research, focusing on understanding of trends behind the use of standards by value chain actors, the market and also methodological issues relating to how we better understanding the impact of standards in the agricultural sector. An important issue for discussion is to whom this research agenda should be targeted. Some of the issues highlighted in the report may be considered by standards bodies themselves or companies using the standards, but others may be areas of research for donors or governments or others concerned with broader public benefits, including academic researchers. The balance of cost and benefit should be an important factor in determining who should lead in taking forward the research agenda to deal with the gaps in knowledge identified. Indeed some of our suggestions for research are inevitably very costly and no one study can cover all dimensions of sustainability without considerable cost, not only financial but also to the individual producers involved in the study sample.

A key set of research questions relate to **better understanding the context and drivers of standards systems in the agriculture sector**. One element of this is better understanding of consumer interactions with schemes. Recent studies suggest that there are significant numbers of 'ethical consumers' and they are not confined to developed countries, so the growth in the market is not necessarily curtailed by current slower growth in the global North. Demographic trends are such that the global "middle class" is likely to increase from about 1.8bn today to 4.9bn by 2030 (Kharas, Co-operation et al. 2010), so there may be the increasing potential to harness ethical consumerism globally. But, just as certification schemes can have a mix of motivations underlying them, so consumers may have a mix of reasons for choosing products with labels from particular schemes. Fully understanding consumer motivations, and the balance between price and evidence of impact, would provide scheme owners to adjust their prescriptions so as to best tailor the requirements to

the market forces to bring the impacts about. Given the voluminous market research that exists, it could be mined more effectively but an important area for further investigation is the link between awareness and ethical purchase behaviour, particularly how in terms of how ethical consumption is co-created by the consumer and companies.

Perhaps more a more significant research gap is better understanding of how private standards interact with public regulations, both in the form of hard and soft regulatory frameworks at national and international scales. There is also a gap in terms of how one standard compares to another. Standard owners have not, for obvious reasons, pursued this rigorously, and it is an area of research appropriate for public or independent funding.

In this report we have highlighted the role of **supply chain sustainability** as a driver in some sectors for companies to engage with standards systems. Recent growth in the uptake of many standards has been facilitated by the interest of brands and retailers. More work is required on what has motivated this and what may sustain it long-term, including consideration of the most appropriate mix between government regulation and industry peer and market pressure.

The **relationship between the standards and the range of tools for supply chain viability** needs to be examined in more depth. This could be linked to the effect of different value chain configurations and CSR strategies on the development and implementation of standards. Concentration in food and agriculture, especially in manufacture and retail (see Vorley, 2003) can be regarded as a potential leverage point for introducing or spreading tools like standards and certification, with supply chains being an important mechanism for upscaling impact. However, it is important to recognize the power of retailers and brands in shaping the content and implementation of standards to better meet their needs, which may not coincide with the needs of the poorest nor the needs of sustainability (Nelson et al, 2012). Involvement in value chains is not always on favourable terms to producers, as noted by Bolwig et al (2010) and more work on the terms of incorporation is called for. This will require the development of new methodological frameworks as well as better understanding of current trends. Moreover, this needs to be set in the context of the grand challenges facing the globe in terms of climate change and food security.

Some standards can be exclusionary, as data on the costs of compliance and studies which show the capacity requirements for engagement in standards show (particularly for GlobalGAP). Standards are not always a tool to benefit the very poorest who lack access to land or other inputs vital to produce a quality product. Standards can therefore be a mechanism by which socio-economic divisions can be exacerbated, from gender inequality to ethnic and income differences. A current debate in fair trade more generally is whether current approaches to standards restrict benefits to certain kinds of producer, e.g. those that are organized producers, which thus limits the potential for poverty reduction. More work on **if and how these differences can be reduced** is required.

The second part of our research agenda is **methodological**. It is difficult to assess the impact of an intervention on sustainability for a whole range of reasons outlined in Section 3.2.2 and Section 3.3.2. Put simply, a farm is part of a larger dynamic system, environmental, social and economic. That means it changes over time, and the wider system impacts upon it, and it impacts on the wider system. Furthermore, each farm is unique: in a unique place, at a unique time, with unique people that interact with it. The complexity of the system is that an intervention will propagate through it, and the total impact of the intervention will depend on whether you measure the impact locally or over the system as a whole. The uniqueness of each farm means that the same intervention is likely to have different impacts in different places. From a sampling perspective, this means great care needs to be taken in the design of studies so that one compares like-for-like samples of farms, differing in only the intervention (e.g. belonging to a certification scheme or not). Thus, if we are to fully assess the efficacy of a certification scheme, a corpus of work is needed that has similar methodology (in terms of the extent to which the system effects are assessed) and has attempted to understand and control for the uniqueness of each farm. However, as we note below, some studies may have different objectives than a 'full' sustainability assessment, and different kinds of study designs are required here, for example with respect to impact assessments focused on enhancing socio-economic or distributional outcomes for producers or communities.

The overall conclusion of our review is that it is hard to draw firm conclusions, and that there is little evidence to support strong inference that certification schemes do impact on sustainability in a positive way. Given the complexity of the farming system (in terms of agricultural practice, and local heterogeneities), and that each farm is embedded in a wider socio-economic and socio-environmental system, it is perhaps not surprising that there is little consensus between many different parts of the literature. Given the heterogeneity, it is

always possible to “cherry pick” particular studies that favour a particular viewpoint, ignoring those that do not, so there might be value in conducting a very quantitative assessment. However, our contention is that given the methodological differences between studies this is also problematic. It is perfectly possible to use the same data to support opposing conclusions depending on where the system boundary is drawn (Wood, Lenzen et al. 2006; Hodgson, Kunin et al. 2010; Cooper, Butler et al. 2011). Thus, though at times there is some evidence that indicates there are positive effects and some that indicates negative effects, a conservative stance might be that heterogeneity in methodology means that there is little evidence to support a firm view. In the phrasing of statistical analysis, heterogeneity in methodologies means that the statistical power (the ability to detect a true effect when one exists) is too low to draw conclusions that certification schemes truly promote sustainability.

This therefore raises a number of large questions. The first is a research question: **if a certification scheme truly wanted to increase sustainability, how should it be assessed?** What is the appropriate research design in the light of the questions being asked, for example, what sample size is needed for the intervention and control groups? How should the uniqueness of place and time be taken into account? What things should be measured (e.g. for environmental sustainability should greenhouse gas emissions, biodiversity impacts and pollution be assessed together, and if so, how should they be weighted?) and at what scale (the farm scale, the landscape scale, or through the whole system via life-cycle analysis)?

Similar questions arise for both economic and social sustainability: one can imagine scenarios where what improves matters for one part of the supply chain makes things worse at another (for example, adoption of a low-yielding but high quality practice in one area, could reduce supply for low-quality produce, leading to conversion of land elsewhere into plantation agriculture, with the social and economic impacts it would have). Is it necessary to include counter-factuals? Is it sufficient to focus on the generic introduction of best management practices, or should this be linked to the introduction of particular standards? Does the focus on counter-factuals and trying to ensure comparison between like for like groups lead to important structural and contextual factors being overlooked? More work is needed on attribution of impact, particularly how to do this in a cost-effective way.

Methodological choices need greater debate and also it is important to recognise the values that lie behind different approaches as well as the differing purposes for which impact

assessment is being used. We thus support **further research on appropriate methodologies for assessing standards by different actors and for different purposes.** More capacity is required amongst observers, those within standard systems and commercial stakeholders as to the differences in methods and what they imply. There is insufficient understanding of the different approaches available for assessing impact and their various pros and cons.

Greater **inter-disciplinarity** is also needed amongst researchers exploring in a holistic sense the full range of impacts across scales, actors, currencies etc. Sustainability is a challenge that cuts across disciplinary boundaries and there is a need for social and natural scientists to work together more on tackling the issues. A very simple example is that natural science-led studies require a better understanding of how standards systems and trading relations work and how their findings can be fed into political and institutional change and some social science-led studies require a better understanding of the complexity of understanding the interactions between land-use and ecosystem service impacts at multiple spatial scales. A useful starting point for generating ideas on how this may be done is recent work on climate change adaptation, particularly from a resilience perspective (Pelling 2011, Walker and Salt 2006).

The second question concerns the **purpose of the certification scheme.** There is a need, as ISEAL amongst others highlight, to better articulate the theories of change embodied in standards systems which can then lend greater clarity in terms of what one is trying to measure. Whilst standard schemes are engaging with this agenda already, it is important that this translates to impact assessments, not only by standards bodies themselves but also the by other researchers. Is the purpose of the scheme to increase sustainability in a broad environmental sense or to promote a farming practice that is driven by particular cultural or ethical stance, create differentiation in the market allowing price premia, or to create particular outcomes for particular production systems? Depending on the extent to which any or all apply, certification schemes should perhaps be willing to engage with the issues (such as the trade-offs involved) and perhaps evolve their prescriptions and marketing to make it more transparent which applies. So, for example, if a certification scheme aims to reduce an agro-chemical it should justify why (whether to reduce local pollution, indirect impacts on the ecosystem and gain energy savings through production and application processes, or to reduce potential harmful impacts on farm workers), whilst being open that this may lead to lower yields, greater pest damage, more waste and the potential for

intensification or land clearance elsewhere if overall yield decreases and demand stays the same. Similarly, the majority of loss of forest is for conversion to agricultural land (Lambin and Meyfroidt 2011), and a route to protect rainforest would potentially encourage intensification of adjoining land and harnessing the opportunities of the global market (Lambin and Meyfroidt 2011). This suggests the potential for a certification scheme to protect rainforests to encourage local intensification of land outside rainforest reserves. In other words, there is the potential for evidence-based prescriptions in order to meet the overall aims of the scheme. Organic farming is a perfectly valid production system that can have many localised positive impacts and should certainly be promoted in a range of situations (especially in habitats of high conservation value, or where there are traditional farming systems with strong cultural value). However, the inherent reduction in yield that comes with non-intensive methods implies that there are indirect effects that means unless demand is simultaneously reduced (against a historical upward trend) conversion of a large proportion of existing high production land to organic will create strong negative environmental impacts. There are ways to mitigate environmental impacts and not suffer the yield drop inherent in organic farming, via conservation agriculture, integrated agriculture or precision agriculture (Bongiovanni and Lowenberg-Deboer 2004; Gelfand, Snapp et al. 2010; Alluvione, Moretti et al. 2011; Nemecek, Huguenin-Elie et al. 2011). Thus, not being open and transparent about impacts and assessment risks the certification scheme being unsustainable itself as nuanced arguments can undercut public perceptions of what is being claimed (or perceived to be being claimed) by the scheme.

A final aspect of the methodological agenda is to highlight the need for more work to identify potential indicators for assessing **multiple dimensions of poverty impact**, especially empowerment ones that tend to be less tangible and measurable than economic indicators. Indicators to measure organisational capacity and democracy, market access, empowerment, gender relations and value chain relations.

Certification schemes, if they encourage sustainable practices, can be an important driver for agricultural change by harnessing forces towards explicit consideration of sustainability

References

- Abson, D. J. (2011). Landscape heterogeneity, farmland birds and economic resilience in UK lowland agroecosystems. School of Earth & Environment. Leeds, University of Leeds. PhD: 297.
- Alluvione, F., B. Moretti, et al. (2011). "EUE (energy use efficiency) of cropping systems for a sustainable agriculture." *Energy* 36(7): 4468-4481.
- Amin, A. and N. Thrift (1994) 'Living in the global'. In Amin, A. and N. Thrift (eds) *Globalization, Institutions and Regional Development in Europe*, Oxford University Press.
- Arnould, E.J., Plastina, A., Ball, D., 2009. Does Fair Trade Deliver on Its Core Value Proposition? Effects on Income, Educational Attainment, and Health in Three Countries. *Journal of Public Policy & Marketing* 28, 186-201.
- Auger et al (2010) "The importance of social product attributes in consumer purchasing decisions: A multi-country comparative study." *International Business Review* 19(2): 140-159.
- Baguette, M. and T. Hance (1995). Carabid beetles and agricultural practices: Influence of soil ploughing. European Workshop on Entomological Research in Organic Agriculture, Vienna, Austria.
- Barrientos, S. (2000). "Globalization and ethical trade: assessing the implications for development." *Journal of International Development* 12(4): 559-570.
- Barrientos, S. and S. Smith (2007). "Do workers benefit from ethical trade? Assessing codes of labour practice in global production systems." *Third World Quarterly* 28(4): 713-729.
- Barrientos, Stephanie (2011) Beyond Fair Trade: Why are Mainstream Chocolate Companies Pursuing Social and Economic Sustainability in Cocoa Sourcing? Paper to ILO/IFC Better Work Conference, October 2011 [draft from author]
- Bastide, P., F. Ribeyre, et al. (2009). Are "Organic Agriculture" and "Fairtrade" Labels an Opportunity for Cocoa Producers? Power-point presentation. Montpellier, France, UMR Qualisud, Cirad.
- Batary, P., B. Andras, et al. (2011). "Landscape-moderated biodiversity effects of agri-environmental management: a meta-analysis." *Proceedings of the Royal Society of London, Series B: Biological Sciences* 278(1713): 1894-1902.
- Batary, P., B. Andras, et al. (2011). "Landscape-moderated biodiversity effects of agri-environmental management: a meta-analysis." *Proceedings of the Royal Society of London, Series B: Biological Sciences* 278(1713): 1894-1902.

- Battisti, D. S. and R. L. Naylor (2009). "Historical Warnings of Future Food Insecurity with Unprecedented Seasonal Heat." *Science* 323(5911): 240-244.
- Beddington, J. R., M. Asaduzzaman, et al. (2012). "What Next for Agriculture After Durban?" *Science* 335(6066): 289-290.
- Bengtsson, J., J. Ahnstrom, et al. (2005). "The effects of organic agriculture on biodiversity and abundance: a meta-analysis." *Journal of Applied Ecology* 42(2): 261-269.
- Benton, T. G., A. J. Dougill, et al. (2011). "The scale for managing production vs the scale required for ecosystem service production." *World Agriculture* 2(1): 11.
- Benton, T. G., J. A. Vickery, et al. (2003). "Farmland biodiversity: is habitat heterogeneity the key?" *Trends in Ecology & Evolution* 18(4): 182-188.
- Blackman, A. and J. Rivera (2010). "The Evidence Base for Environmental and Socioeconomic Impacts of "Sustainable" Certification." RFF Discussion Paper 10-17 [online], [Accessed 20th August 2011], Available from: <http://www.rff.org/documents/RFF-DP-10-17.pdf>
- Blackman, A., Naranjo, M.A., 2010. Does eco-certification have environmental benefits? Organic coffee in Costa Rica. Working paper. Washington, DC: Resources for the Future
- Blowfield, M (2010) Business, Corporate Responsibility and Poverty Reduction, in Utting, P and Marques, J M (eds) Corporate social responsibility and regulatory governance : towards inclusive development? Basingstoke : Palgrave Macmillan
- Blowfield, M. (1999). "Ethical Trade: A review of developments and issues." *Third World Quarterly* 20(4).
- Blowfield, M. and Dolan, C. (2010) Fairtrade Facts and Fancies: What Kenyan Fairtrade Tea Tells us about Business' Role as a Development Agent, *Journal of Business Ethics*, 93: 143-162.
- Blowfield, M. and Murray, A. (2008) *Corporate Responsibility: A Critical introduction*, Oxford University Press.
- BMZ (Federal Ministry for Economic Cooperation and Development) (2008) Evaluation Report 043. 'Introduction of Voluntary Social and Ecological Standards in Developing Countries: Summary Version of the Evaluation'. http://www.bmz.de/en/publications/type_of_publication/evaluation/evaluation_reports_since_2006/EvalBericht043.pdf

- Bolwig, S., S. Ponte, A. du Toit, L. Riisgaard and N. Halberg, 2010. Integrating Poverty and Environmental Concerns into Value-Chain Analysis: A Conceptual Framework, *Development Policy Review*, 28(2), 173-194.
- Bondy, T and V. Talwar,(2011) Through thick and thin: how fair trade consumers have reacted to the global economic recession. *Journal of business ethics*, 101 (3). pp. 365-383.
- Bongiovanni, R. and J. Lowenberg-Deboer (2004). "Precision Agriculture and Sustainability." *Precision Agriculture* 5(4): 359-387.
- Bright, D., Seville, D. and Borkenhagen, L. 2010. 'Think big. Go small: Adapting business models to incorporate smallholders into supply chains.' Briefings for Business Series. Oxford, UK: Oxfam International.
- Busch, L. and C. Bain (2004). "New! Improved? The Transformation of the Global Agrifood System." *Rural Sociology* 69(3): 321-346.
- Carey, C and Guttentstein, E, (2008), Governmental Use of Voluntary Standards: Innovation in Sustainability Governance, ISEAL Alliance. [Accessed 20th August 2011] Available from http://www.isealalliance.org/sites/default/files/R079_GUVS_Innovation_in_Sustainability_Governance_0.pdf
- Carrera, F., D. Stoian, J.J. Campos, J. Morales and G. Pinelo (2004). "Forest Certification in Guatemala", *Forest Certification in Developing and Transitioning Societies: Social, Economic, and Ecological Effects*, Yale School of Forestry and Environmental Studies, 10 and 11 June 2004. New Haven, Connecticut.
- Chan, M K and Pound, B (2009) Final report: literature review of sustainability standards and their poverty impact, Report for the Natural Resources Institute.
- Chan, M.K (2010) Improving Opportunities for Women in Smallholder-based Supply Chains, Business case and practical guidance for international food companies, *Prepared for the Bill & Melinda Gates Foundation*, available from <http://www.gatesfoundation.org/learning/Documents/gender-value-chain-guide.pdf> [accessed 20 Jan 2011]
- Cline, W (2007). "Global Warming and Agriculture: Impact Estimates by Country". Center for Global Development. Available at <http://www.cgdev.org/content/publications/detail/14090>. [Accessed on 30.09.11].

- Coley, D., M. Howard, et al. (2009). "Local food, food miles and carbon emissions: A comparison of farm shop and mass distribution approaches." *Food Policy* 34(2): 150-155.
- Concepción, E., M. Díaz, et al. (2008). "Effects of landscape complexity on the ecological effectiveness of agri-environment schemes." *Landscape Ecology* 23(2): 135-148.
- Cooper, J. M., G. Butler, et al. (2011). "Life cycle analysis of greenhouse gas emissions from organic and conventional food production systems, with and without bio-energy options." *Njas-Wageningen Journal of Life Sciences* 58(3-4): 185-192.
- Cooperative Bank, (2010), "Cooperative Ethical Consumerism Report", [online], [Accessed 1st September 2011], available from <http://www.goodwithmoney.co.uk/ethical-consumerism-report-2010>
- COSA (2008) Seeking Sustainability: COSA Preliminary Analysis of Sustainability Initiatives in the Coffee Sector, available from <http://sustainablecommodities.org/files/COSA%20Seeking%20Sustainability.pdf>
- Cotte J., Ivey, R., and Trudel R. (2009). Socially conscious consumerism, a systematic review of the body of knowledge. www.nbs.net/wp-content/uploads/NBS_Consumerism_SR_Researcher.pdf, Accessed 25 Jan 2010
- Dabbert, S. (2006) "Measuring and Communicating the Environmental Benefits of Organic Food Production". *Crop Management* DOI: 10.1094/CM-2006-0921-13-RV
- Dasgupta. N. (2000) Environmental Enforcement and Small Industries in India: Re-working the Problem in the Poverty context, *World Development*. Vol. 28 No. 5
- De Battisti A. Borot, J. MacGregor and A. Graffham (eds) *Standard Bearers: Horticultural Exports and Private Standards in Africa*. London, International Institute for Environment and Development (IIED) and Natural Resources International (NRI).
- Deasy, C., J. N. Quinton, et al. (2009). "Mitigation Options for Sediment and Phosphorus Loss from Winter-sown Arable Crops." *Journal of Environmental Quality* 38(5): 2121-2130.
- Deasy, C., J. N. Quinton, et al. (2009). "Mitigation Options for Sediment and Phosphorus Loss from Winter-sown Arable Crops." *Journal of Environmental Quality* 38(5): 2121-2130.

- Deasy, C., J. N. Quinton, et al. (2010). "Contributing understanding of mitigation options for phosphorus and sediment to a review of the efficacy of contemporary agricultural stewardship measures." *Agricultural Systems* 103(2): 105-109.
- Deasy, C., J. N. Quinton, et al. (2010). "Contributing understanding of mitigation options for phosphorus and sediment to a review of the efficacy of contemporary agricultural stewardship measures." *Agricultural Systems* 103(2): 105-109.
- Deloitte/GMA (2009) Finding the green in today's shoppers: Sustainability trends and new shopper insights, accessed from http://www.ahcgroup.com/mc_images/category/93/deloitte_on_competing_on_green_with_shoppers.pdf
- Development Assistance Committee's (DAC) (2009), Development Evaluation Resources and systems – a study of network members. The DAC Network on Development Evaluation. OECD.
- Didha, R., Denmead L and Deakin E (in press) Riches to rags: the ecological consequences of land-use intensification in New Zealand In *Biodiversity conservation and land use intensification* (eds David Lindenmayer, Saul Cunningham, Andrew Young, Linda Broadhurst). CSIRO publishing.
- Donald, P. F. and A. D. Evans (2006). "Habitat connectivity and matrix restoration: the wider implications of agri-environment schemes." *Journal of Applied Ecology* 43(2): 209-218.
- Eberhart, N. and Smith S. (2008) 'A methodological guide for assessing the impact of Fairtrade' prepared for FLO international
- Edelman (2009). Edelman goodpurpose® Study 2010. Fourth annual global consumer survey. Edelman.
- Elbert, W., Weber, B., Büdel, B., Andreae, M.O. and Pöschl, U. 2009. 'Microbiotic crusts on soil, rock and plants: neglected major players in the global cycles of carbon and nitrogen'. *Biogeosciences* 6:6983-7015
- Ellis, K. and J. Keane "A review of Ethical Standards and labels: is there a gap in the market for a new 'Good for Development' label?" ODI Working Papers 297.
- Ethical Corporation (2011) CEO interview: Nick Bunker, president, Kraft Foods and Cadbury, UK and Ireland, Ethical Corporation 4 September 2011, available from <http://www.ethicalcorp.com/communications-reporting/ceo-interview-nick-bunker-president-kraft-foods-and-cadbury-uk-and->

ireland?utm_source=http%3a%2f%2fuk.ethicalcorp.com%2ffc_ethicalcorporationlz%2f&utm_medium=email&utm_campaign=EC+News+14+09+11&utm_term=Price+still+rules%2c+even+amongst+green+consumers&utm_content=44616

European Commission, (2010) An analysis of the EU organic sector, Directorate-General for Agriculture and Rural Development

http://ec.europa.eu/agriculture/analysis/markets/organic_2010_en.pdf

Fairtrade Foundation (2009) Unpeeling the Banana Trade,

<http://www.bananalink.org.uk/images/stories/documents/2009/ftf%20unpeeling%20%20the%20banana%20trade%20feb%202009.pdf>

Fairtrade International, (2011), "Facts and Figures", [online] [accessed on 30th August, 2011], available from http://www.fairtrade.net/facts_and_figures.0.html

Falloon, P., P. Smith, et al. (2006). "RothCUK - a dynamic modelling system for estimating changes in soil C from mineral soils at 1-km resolution in the UK." *Soil Use and Management* 22(3): 274-288.

Flohre, A., C. Fischer, et al. (2011). "Agricultural intensification and biodiversity partitioning in European landscapes comparing plants, carabids, and birds." *Ecological Applications* 21(5): 1772-1781.

Flohre, A., C. Fischer, et al. (2011). "Agricultural intensification and biodiversity partitioning in European landscapes comparing plants, carabids, and birds." *Ecological Applications* 21(5): 1772-1781.

Foresight (2011). *The Future of Food and Farming: Challenges and choices for global sustainability*, The Government Office for Science, London.

Gabriel, D., S. J. Carver, et al. (2009). "The spatial aggregation of organic farming in England and its underlying environmental correlates." *Journal of Applied Ecology* 46(2): 323-333.

Gabriel, D., S. M. Sait, et al. (2010). "Scale matters: the impact of organic farming on biodiversity at different spatial scales." *Ecology Letters* 13(7): 858-869.

Gaines, T. P. and S. T. Gaines (1994). "SOIL TEXTURE EFFECT ON NITRATE LEACHING IN SOIL PERCOLATES." *Communications in Soil Science and Plant Analysis* 25(13-14): 2561-2570.

- Gaiser, T., M. Abdel-Razek, et al. (2009). "Modeling carbon sequestration under zero-tillage at the regional scale. II. The influence of crop rotation and soil type." *Ecological Modelling* 220(23): 3372-3379.
- García Martínez, M. and N. Poole (2009). "Fresh Perspectives 4 – Ethical consumerism: development of a global trend and its impact on development" in A. Borot de Battisti, J. MacGregor and A. Graffham (eds) *Standard Bearers: Horticultural Exports and Private Standards in Africa*. London, International Institute for Environment and Development (IIED) and Natural Resources International (NRI): 18-21.
- Geiger, F., F. Berendse, et al. (2010). "Persistent negative effects of pesticides on biodiversity and biological control potential on European farmland." *Basic and Applied Ecology* 11(2): 97-105.
- Gelfand, I., S. S. Snapp, et al. (2010). "Energy Efficiency of Conventional, Organic, and Alternative Cropping Systems for Food and Fuel at a Site in the US Midwest." *Environmental Science & Technology* 44(10): 4006-4011.
- Gerzema, J and D'Antonio, M (2011) *Spend Shift: How the post-crisis values revolution is changing the way we buy, sell and live*, excerpts at <http://www.brandassetconsulting.com/pdfs/spendshift.pdf>
- Giovannucci, D. and S. Ponte (2005). "Standards as a new form of social contract? Sustainability initiatives in the coffee industry." *Food Policy* 30(3): 284-301.
- GLOBALG.A.P, [online], "About us" [Accessed 1st September 2011], available from http://www.globalgap.org/cms/front_content.php
- Godfray, H. C. e. a. (2010). "Food security: The challenge of feeding 9 billion people. ." *Science* 327: 812–818.
- Godfray, H. C. J. (2011). "Food and Biodiversity." *Science* 333(6047): 1231-1232.
- Graffham, A., Karehu, E., & MacGregor, J. (2007). "Fresh Perspectives 11 - Impact of GlobalG.A.P on small-scale vegetable growers in Kenya". " in A. Borot de Battisti, J. MacGregor and A. Graffham (eds) *Standard Bearers: Horticultural Exports and Private Standards in Africa*. London, International Institute for Environment and Development (IIED) and Natural Resources International (NRI): 53-56.
- Green, R. E., S. J. Cornell, et al. (2005). "Farming and the fate of wild nature." *Science* 307(5709): 550-555.
- Harrison, R. Newholm, T and Shaw, D. (2005). *The Ethical Consumer*. Sage.

- Hatanaka, M., C. Bain, et al. (2005). "Third-party certification in the global agrifood system." *Food Policy* 30(3), [Accessed 20th August 2011], pp. 354-369.
- Havinga, T. (2006) Private regulation of food safety by supermarkets. *Law and Policy*, 28(4), pp. 515–533.
- Henson, S and Humphrey, J. (2009), "The Impacts of Private Food Safety Standards on the Food Chain and on Public Standard-Setting Processes", FAO/WHO. [Accessed 18th August 2011], available from <http://www.fao.org/docrep/012/i1132e/i1132e00.pdf>
- Henson, S. and J. Humphrey (2010). "Understanding the Complexities of Private Standards in Global Agri-Food Chains as They Impact Developing Countries." *Journal of Development Studies* 46(9): 1628-1646.
- Henson, S. and T. Reardon. 2005. "Private agri-food standards: Implications for food policy and the agri-food system", *Food Policy* [online], 30(3), [Accessed 20th August 2011], pp.241–253
- Hodgson, J. A., A. Moilanen, et al. (2011). "Habitat area, quality and connectivity: striking the balance for efficient conservation." *Journal of Applied Ecology* 48(1): 148-152.
- Hodgson, J. A., W. E. Kunin, et al. (2010). "Comparing organic farming and land sparing: optimizing yield and butterfly populations at a landscape scale." *Ecology Letters* 13(11): 1358-1367.
- Hole, D. G., A. J. Perkins, et al. (2005). "Does organic farming benefit biodiversity?" *Biological Conservation* 122(1): 113-130.
- Humphrey, J. (2008) Private standards, small farmers and donor policy: EurepGAP in Kenya. IDS Working Paper 308, Institute of Development Studies, Brighton.
- IFOAM, [online], [Accessed 2nd September], available from http://www.ifoam.org/about_ifoam/index.html
- IGD, (2008), "Ethical Shopping - Are UK Shoppers Turning Green?", *Industry of Grocery Distribution* [online], [Accessed 30th August 2011], available from <http://www.igd.com/index.asp?id=1&fid=2&sid=2&cid=214>
- IGD, (2010), "Shopper Trends 2010 Report", *Industry of Grocery Distribution* [online], [Accessed 30th August 2011], available from <http://www.igd.com/index.asp?id=1&fid=2&sid=2&cid=1113>
- IGD, (2011) "Shopper research for Fairtrade Fortnight, [Accessed 30th August 2011], available from <http://www.igd.com/index.asp?id=1&fid=1&sid=8&tid=30&folid=0&cid=1967>

- Institute of Development Studies and the University of Ghana (2008) Mapping sustainable production in Ghanaian cocoa, Report to Cadbury.
- Institute of Grocery and Distribution (2008) Ethical Shopping - Are UK Shoppers Turning Green?
- Institute of Grocery and Distribution (2010), Ethical Consumers as the driving force? IGD Shopper Trends Report 2010, [Accessed 18 August 2011] available from <http://www.igd.com/index.asp?id=1&fid=1&sid=8&tid=30&cid=291#2>
- ISEAL (2010) Assessing the Impacts of Social and Environmental Standards Systems v1.0 ISEAL Code of Good Practice,
http://www.isealalliance.org/sites/default/files/P041_ISEAL_Impacts_Codev1.0.pdf
- ITC (2010), "Market access, transparency and fairness in global trade: Export impact for Good 2010", International Trade Centre Technical Paper, [Accessed 18th August 2011], available from <http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/Market-access-transparency-fairness-in-global-trade-Export-Impact-for-Good-2010.pdf>
- ITC (2011a), "The Impacts of Private Standards on Global Value Chains: Literature review series on the impacts of private standards - Part I", International Trade Centre Technical Paper, [Accessed 18th August 2011], available from http://www.standardsmap.org/documents/impact_on_global_value_chains/files/783/New%20Standards%20Impact%20Value%20Chain%20final%2015June.pdf
- ITC (2011b), "The impacts of private standards on producers in developing countries: Literature Review Series on the Impacts of Private Standards - Part II", International Trade Centre Technical Paper, [Accessed 18th August 2011], available from http://www.standardsmap.org/documents/impacts_standards_producers/files/784/Standards%20Map_%20The%20impacts%20of%20private%20standards%20on%20producers.pdf
- ITC (2011c) Trends in the Trade of Certified Coffees. (Technical paper). Geneva: ITC
- Jaffee, D (2010) Fair Trade Standards, Corporate Participation, and Social Movement Responses in the United States, *Journal of Business Ethics*, 92:267–285
- Jaffee, D. (2008). "Better, but not great': the social and environmental benefits and limitations of Fair Trade for indigenous coffee producers in Oaxaca, Mexico", in Ruben, R. (ed.) *The impact of Fair Trade*. Academic Publishers, Wageningen,
- James, A.J., Postma, L., Otte, C. (2003)'Qualitative Information Appraisal: Using People's Perceptions in Large Development Projects'.available from <http://portals.wi.wur.nl/ppme/?page=2151>

- Just Food (2010) RSPO logo to give sustainable palm oil on-pack profile 18 November 2010, http://www.just-food.com/analysis/rspo-logo-to-give-sustainable-palm-oil-on-pack-profile_id113277.aspx
- Kautz, T., C. Lopez-Fando, et al. (2006). "Abundance and biodiversity of soil microarthropods as influenced by different types of organic manure in a long-term field experiment in Central Spain." *Applied Soil Ecology* 33(3): 278-285.
- Kennedy, E (2011) Testing A BMP-Based Approach for Assessing Gaps in Certification Impacts Research, 24 June 2011
- Kharas, H., O. f. E. Co-operation, et al. (2010). The emerging middle class in developing countries, OECD Development Centre.
- Kibblewhite, M. G., K. Ritz, et al. (2008). "Soil health in agricultural systems." *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 363: 685-701.
- Kladivko, E. J. (2001). "Tillage systems and soil ecology." *Soil & Tillage Research* 61(1-2): 61-76.
- Kleijn, D., M. Rundlöf, et al. (2011). "Does conservation on farmland contribute to halting the biodiversity decline?" *Trends in Ecology & Evolution* 26(9): 474-481.
- Kuruvilla, S.C and Verma, A. (2006) International Labor Standards, Soft Regulation, and National Government Roles Articles & Chapters. Paper 37. <http://digitalcommons.ilr.cornell.edu/articles/37> [Final paper published as Kuruvilla, S., & Verma, A. (2006). International labor standards, soft regulation, and national government roles. *Journal of Industrial Relations*, 48(1), 41-58]
- Lambin, E. F. and P. Meyfroidt (2011). "Global land use change, economic globalization, and the looming land scarcity." *Proceedings of the National Academy of Sciences of the United States of America* 108(9): 3465-3472.
- Langland, Lise (1998) 'On communicating the complexity of a Green Message. Part 1: The Max Havelaar Case', *Greener Management International*, Summer 1998.
- Laroche, K, Jimenez, R, and V. Nelson (forthcoming) 'Assessing the impact of Fairtrade on cocoa producers in Peru'. NRI report. Study commissioned by the Fairtrade Foundation
- Laurance, W. F., L. P. Koh, et al. (2010). "Improving the Performance of the Roundtable on Sustainable Palm Oil for Nature Conservation." *Conservation Biology* 24(2): 377-381
- Leinonen, I., A. G. Williams, et al. (2012). "Predicting the environmental impacts of chicken systems in the United Kingdom through a life cycle assessment: Broiler production systems." *Poultry Science* 91(1): 8-25.

- Lester, G. (2010). Comparison of Organic versus Conventional Produce: Effects on Human Health Nutrients, USDA
- Lobell, D. B., M. B. Burke, et al. (2008). "Prioritizing climate change adaptation needs for food security in 2030." *Science* 319(5863): 607-610.
- Lobell, D. B., M. Banziger, et al. (2011). "Nonlinear heat effects on African maize as evidenced by historical yield trials." *Nature Climate Change* 1(1): 42-45.
- Loureiro, M. L. and J. Lotade (2005). "Do fair trade and eco-labels in coffee wake up the consumer conscience?" *Ecological Economics* 53(1): 129-138
- Lyon, S. (2008). "We want to be equal to them: Fair trade Coffee certification and gender equity within Organizations." *Human Organization* 67(3): 258 - 268.
- Macdonald, K. (2007). "Globalising Justice within Coffee Supply Chains? Fair Trade, Starbucks and the Transformation of Supply Chain Governance." *Third World Quarterly* 28(4): 793-812.
- MacGregor, J. "Fresh Perspectives 2 - Understanding stakeholder drivers for introducing and complying with private voluntary standards – a fresh produce example" in A. Borot de Battisti, J. MacGregor and A. Graffham (eds) *Standard Bearers: Horticultural Exports and Private Standards in Africa*. London, International Institute for Environment and Development (IIED) and Natural Resources International (NRI): 10-14.
- Maertens, M. and J. F. M. Swinnen (2007). *Trade, Standards, and Poverty: Evidence from Senegal*. Centre for the Study of African Economies Conference on "Economic Development in Africa". Oxford, UK, LICOS Centre for Institutions and Economic Performance & Department of Economics, University of Leuven.
- Malins, A., and V. Nelson (1998) *Impact assessment of a fair trade, organic cotton scheme, Uganda.*, NRI report, University of Greenwich.
- Malpass, Alice; Cloke, Paul; Barnett, Clive and Clarke, Nick (2007). Fairtrade urbanism? The politics of place beyond place in the Bristol fairtrade city campaign. *International Journal of Urban and Regional Research*, 31(3), pp. 633–645.
- Mars Incorporated (2010) How to ensure a healthy cocoa industry long term? Presentation at World Cocoa Foundation 18th Partnership Meeting 20 October 2010, available at: <http://www.worldcocoafoundation.org/who-we-are/partnership-meetings/documents/F.Mars-MarsIncorporated.pdf> [accessed 26 September 2011]
- Martin, A., Gündel, S., Apenteng, E. and Pound, B (2011) *Review of Literature on Evaluation Methods Relevant to Extension*. GFRAS – Global Forum for Rural Advisory Services, Lindau, Switzerland. www.g-fras.org

- McCarthy, J and Zen, Z (2010) Regulating the Oil Palm Boom: Assessing the Effectiveness of Environmental Governance Approaches to Agro-industrial Pollution in Indonesia, *Law and Policy* 32 (1): 153-179
- Middlemiss, L.K. 2010. Reframing Individual Responsibility for Sustainable Consumption: Lessons from Environmental Justice and Ecological Citizenship, *Environmental Values*, 19, 147-167.
- Mintel (2010) Organic Food. Murray D, Reynolds L and Taylor P (2003). One cup at a Time: Poverty Alleviation and Fairtrade in Latin America. Fairtrade Research Group, Colorado State University. Fairtrade Research Group, Colorado State University (<http://www.colostate.edu/Depts/Sociology/FairTradeResearchGroup>)
- Naoufel, M. (2011). "Farmers adoption of integrated crop protection and organic farming: Do moral and social concerns matter?" *Ecological Economics* 70(8): 1536-1545.
- Naoufel, M. (2011). "Farmers adoption of integrated crop protection and organic farming: Do moral and social concerns matter?" *Ecological Economics* 70(8): 1536-1545.
- Neil, C. (2009). Fairtrade Certification: consumer demand, marketing leverage and the process and benefits, Fairtrade Labelling ANZ
- Nelson, V and Martin, A M (2011) Impact Evaluation of Social and Environmental Voluntary Standard Systems (SEVSS): Using theories of change, Natural Resources Institute, University of Greenwich Report: Chatham, http://www.nri.org/projects/tradestandards/docs/final_dfid_paper_on_using_theories_of_change_in_ie_of_standards.pdf
- Nelson, V and Pound, B (2009) 'A Review of the Impact of Fairtrade over the Last Ten Years', commissioned by the Fairtrade Foundation, http://www.fairtrade.org.uk/resources/natural_resources_institute.aspx
- Nelson, V. and Galvez, M (2000) 'Social Impact of Ethical and Conventional Brazil Nut Trading on Forest-Dependent People in Peru', NRET, University of Greenwich
- Nelson, V. and Galvez, M (2000) 'Social Impact of Ethical and Conventional Cocoa Trading in Forest-Dependent People in Ecuador, NRET, University of Greenwich.
- Nelson, V., A. Martin, and J. Ewert (2002) 'Methodological challenges to the impact assessment of codes of practice'. Paper presented at the 5th Annual Warwick Corporate Citizenship Unit, Corporate Citizenship Conference, 2002.
- Nelson, V., A. Martin, and Joachim Ewert (2007). The Impacts of Codes of Practice on Worker Livelihoods; Empirical evidence from the South African wine and Kenyan cut flower industries. *Journal of Corporate Citizenship* 28, December 2007. pp61-72

- Nelson, V., A. Martin, M. Morris, M.Omosa, J. Ewert (2006). Briefing paper No.3: Methodological lessons from experience: Assessing the code of practice impacts on workers in African agribusiness.
- Nelson, V., Tallontire, A. and Collinson, C. (2002) Assessing the potential of ethical trade schemes for forest dependent people: comparative experiences from Peru and Ecuador. *International Forestry Review* 4, 99-110
- Nelson, V., Tallontire, A., Opondo, M. (forthcoming 2012) Transformation or transgression? The development potential of Southern local multi-stakeholder initiatives in the context of retailer power, invited chapter to *Food Transgressions: Making sense of contemporary food politics* edited by Michael Goodman and Colin Sage, Ashgate.
- Nemecek, T., D. Dubois, et al. (2011). "Life cycle assessment of Swiss farming systems: I. Integrated and organic farming." *Agricultural Systems* 104(3): 217-232.
- Nemecek, T., O. Huguenin-Elie, et al. (2011). "Life cycle assessment of Swiss farming systems: II. Extensive and intensive production." *Agricultural Systems* 104(3): 233-245.
- Niggli, U., Jawtusich, J., Oehen, B (2010) Do standards and certification matter for sustainability ? Institut de recherche de l'agriculture biologique, Forschungsinstitut für biologischen, (FiBL) Landbau
- NRET (1999) Ethical Trade and Sustainable Rural Livelihoods. Chapter in DFID book 'Sustainable Rural Livelihoods - What Contribution Can we Make? 1999.
- Oelofse, M., H. Høgh-Jensen, et al. (2010). "A comparative study of farm nutrient budgets and nutrient flows of certified organic and non-organic farms in China, Brazil and Egypt." *Nutrient Cycling in Agroecosystems* 87(3): 455-470.
- OPM and IIED (2000). Overview, Impact, Challenges, Fairtrade: Study to Inform DFID's Support to Fairtrade, Department for International Development
- Ouédraogo, E., A. Mando, et al. (2006). "Effects of tillage, organic resources and nitrogen fertiliser on soil carbon dynamics and crop nitrogen uptake in semi-arid West Africa." *Soil and Tillage Research* 91(1-2): 57-67.
- Ouma, S. (2010). "Global Standards, Local Realities: Private Agrifood Governance and the Restructuring of the Kenyan Horticulture Industry." *Economic Geography* 86(2): 197-222.
- Overstreet, L. F., G. D. Hoyt, et al. (2010). "Comparing nematode and earthworm communities under combinations of conventional and conservation vegetable production practices." *Soil & Tillage Research* 110(1): 42-50.

- Oxfam (2010) Better Jobs In Better Supply Chains, Briefings for Business, http://www.oxfam.org.uk/resources/policy/private_sector/better-jobs-better-supply-chains.html
- Oxfam (2011) Growing a Better Future. Food Justice in a resource-constrained world, Oxfam, <http://policy-practice.oxfam.org.uk/publications/growing-a-better-future-food-justice-in-a-resource-constrained-world-132373>
- Parrish, BD; Luzadis, VA; Bentley, WR (2005) What Tanzania's coffee farmers can teach the world: a performance-based look at the fair trade-free trade debate, *Sustainable Development*, 13, pp.177-189.
- Pawson, R. and Tilley, N. (1997), *Realistic Evaluation*, Sage.
- Pelling, M (2011) 'Adaptation to Climate Change: From resilience to transformation'. . Oxon: Routledge.
- Perfecto, I. and J. Vandermeer (2010). "The agroecological matrix as alternative to the land-sparing/agriculture intensification model." *Proceedings of the National Academy of Sciences* 107(13): 5786-5791.
- Phalan, B., M. Onial, et al. (2011). "Reconciling Food Production and Biodiversity Conservation: Land Sharing and Land Sparing Compared." *Science* 333(6047): 1289-1291.
- Phillips, David (2011) Fair trade and community empowerment: the case of sugar producers in Malawi, Briefing Paper, July 2011 (from author)
- Pimentel, D., P. Hepperly, et al. (2005). "Environmental, Energetic, and Economic Comparisons of Organic and Conventional Farming Systems." *Bioscience* 55(7).
- Ponte, S. and Gibbon, P. (2005) 'Quality Standards, Conventions and the Governance of Global Value Chains', *Economy and Society*. 34 (1): 1-3.
- Ponte, S., Gibbon, P., and Vestergaard, J. (eds) (2011) *Governing through Standards: Origins, Drivers and Limitations*, Palgrave MacMillan
- Potts, J., J. van der Meer, J. Daitchman (2010). *The State of Sustainability Initiatives review 2010: Sustainability and transparency*. [Accessed 21st August 2011], available from <http://pubs.iied.org/G03066.html>
- Rainforest Alliance (2010) *Consumer Awareness of the Rainforest Alliance & Rainforest Alliance Certified seal*,
- Rainforest Alliance [online], [Accessed 1st September 2011], available from <http://www.rainforest-alliance.org/about/>

- Raynolds, L. (2002). "Consumer/producer links in fair trade coffee networks". *Sociologia Ruralis*, 42 (4) :404–424.
- Raynolds, L. (2004) The Globalization of Organic Agro-Food Networks, *World Development*, 32 (5): 725-743
- Raynolds, L. (2009). "Mainstreaming Fair Trade Coffee: From Partnership to Traceability." *World Development* 37(6): 1083-1093.
- Reardon T, J.-M. Codron, L. Busch, J. Bingen and C. Harris, 2001. Global change in agrifood grades and standards: agribusiness strategic responses in developing countries, *International Food and Agribusiness Management Review*, 2, 421- 435, as well as literature on livelihoods in agriculture.
- Reardon, T., P. Timmer and J. Berdegué, 2004. The Rapid Rise of Supermarkets in Developing countries: Induced Organizational, Institutional, and Technological Change in Agrifood Systems, *electronic Journal of Agricultural and Development Economics* 1(2), 168-183.
- Reed D. 2009 What do corporations have to do with Fair Trade? Positive and Normative Analysis from a Value Chain perspective. *Journal of Business Ethics*. 86: 3-26
- Reganold, J. P., J. D. Glover, et al. (2001). "Sustainability of three apple production systems." *Nature* 410(6831): 926-930.
- Rickson, R. E., P. Saffigna, et al. (1999). "Farm Work Satisfaction and Acceptance of Sustainability Goals by Australian Organic and Conventional Farmers¹." *Rural Sociology* 64(2): 266-283.
- Riisgaard, L., Michuki, G., Gibbon, P. and Bolwig, S. with Warring, N. and Lund Rantz, L. (2009). *The Performance of Voluntary Standard Schemes from the Perspective of Small Producers in East Africa*. Impact study for Traidcraft. Danish Institute for International Studies: Copenhagen.
<http://www.traidcraft.co.uk/OneStopCMS/Core/CrawlerResourceServer.aspx?resource=653d3eb0ad53462d85c04a27c8c3217e&mode=link&guid=730a1739801f4549aeb64bf850976d8c>
- Riisgaard, L., S. Bolwig, et al. (2010). "Integrating Poverty and Environmental Concerns into Value-Chain Analysis: A Strategic Framework and Practical Guide." *Development Policy Review* 28(2): 195-216.
- Ronchi L (2002b). Monitoring impact of Fairtrade Initiatives: A Case Study of Kuapa Kokoo and the Day Chocolate Company, report for Day Chocolate Company.

- Ronchi, L (2002a). The Impact of Fairtrade on Producers and their Organisations. A Case Study with COOCAFE in Costa Rica, University of Sussex
- Roundtable on Responsible Soy [online] , [Accessed 15th September], available from <http://www.responsiblesoy.org>
- Roundtable on Responsible Soy, (2010). "RTRS Standard for Responsible Soy Production Version 1.0". [Accessed 15th September], available from <http://www.responsiblesoy.org>
- Roundtable on Sustainable Palm Oil. [online]. "Fact Sheet". [Accessed 15th September], available from <http://www.rspo.org/files/pdf/Factsheet-RSPO-Overview.pdf>
- Ruben, R. (ed.) (2008) The Impact of Fairtrade, Academic Publishers, Wageningen
- Ruben, R. and Zuniga, G. (2011). How standards compete: comparative impact of coffee certification schemes in Northern Nicaragua. *Supply Chain Management: An International Journal*, Vol. 16 (2), 98 – 109.
- Schuler, D. A. and P. Christmann (2011). "The Effectiveness of Market-Based Social Governance Schemes: The Case of Fair Trade Coffee." *Business Ethics Quarterly*, Business Ethics Quarterly 21 (1):. 133-156
- Seville, D., A. Buxton, B. Vorley, (2011). "Under what conditions are value chains effective tools for pro-poor development?" [Accessed 21st August], available from <http://pubs.iied.org/16029IIED.html>
- Shaw, D., & Shiu, E. 2003. Ethics in consumer choice: A multivariate modeling approach. *European Journal of Marketing*, 31: 1485-98.
- Shepherd, M., B. Pearce, et al. (2003). AN ASSESSMENT OF THE ENVIRONMENTAL IMPACTS OF ORGANIC FARMING, DEFRA. [Accessed 3rd September, 2011], available from http://orgprints.org/6784/2/OF0405_909_TRP.pdf
- Smith, A (2011) Fair Trade Governance, Public Procurement and Sustainable Development: A case study of Malawian rice in Scotland , Unpublished PhD, University of Cardiff
- Smith, N.C., Palazzo, G and Bhattacharya, C.B (2010) Marketing's Consequences: Stakeholder Marketing and Supply Chain Corporate Social Responsibility Issues, *Business Ethics Quarterly* 20(4): 617-641
- Smith S. (2010) For love or money? Fairtrade business models in the UK supermarket sector. *Journal of Business Ethics* Volume 92, Supplement 2, 257-266,
- Smith, S (2011) 'Comic Relief Review: Which aspects of the different routes to market most effectively support small-scale producers to achieve equitable and sustainable wealth creation?'

- Smith, S. and Barrientos, S. (2005) 'Fair trade and ethical trade: are there moves towards convergence?' *Sustainable Development*, 13 pp 190-198.
- Stevens, C. J., J. N. Quinton, et al. (2009). "The effects of minimal tillage, contour cultivation and in-field vegetative barriers on soil erosion and phosphorus loss." *Soil & Tillage Research* 106(1): 145-151.
- Sutherland, L., Gabriel, D., Hathaway-Jenkins, L., Pascual, U., Schmutz, U, Rigby, D. Godwin, R., Sait, S M, Sakrabani, R., Kunin, B., Benton T G and Stagl, S (in press) The 'Neighbourhood Effect': A multidisciplinary assessment of the case for farmer co-ordination in agri-environmental programmes. *Land Use Policy*.
- Tallontire, A M; Opondo, M; Nelson, V; Martin, A. (2011). Beyond The Vertical? Using Value Chains And Governance As A Framework To Analyse Private Standards Initiatives In Agri-Food Chains. *Agriculture and Human Values*, 28 (3): 427-441
- Tallontire, A. (2000) 'Partnerships in fair trade. Reflections from a case study of Cafédirect', *Development in Practice*, 10(2) pp 166-177
- Tallontire, A. (2007) 'CSR and regulation: Towards a framework for understanding Private Standards Initiatives in the agri-food chain', *Third World Quarterly*, 28(4), pp 775-791
- Tallontire, A., Dolan, C., Smith, S., Barrientos, S. 2007 "Reaching the Marginalised? Gender, Value Chains and Ethical Trade in African Horticulture" *Development in Practice*, 15(3-4), 59-571. doi:10.1080/09614520500075771
- Tilman, D., C. Balzer, et al. (2011). "Global food demand and the sustainable intensification of agriculture." *Proceedings of the National Academy of Sciences of the United States of America* 108(50): 20260-20264.
- Tilman, D., J. Fargione, et al. (2001). "Forecasting agriculturally driven global environmental change." *Science* 292(5515): 281-284.
- Townley, J. (2009) Policy challenges for fair trade in Wales, *Journal of International Development*, 21 (7): 1027-1030
- Unilever (2010). Sustainable Australia? Research into Australian attitudes to sustainability and product certification, Unilever Australia.
- UtzCertified (2010). So you know your product is good inside. Supply and Demand Update. Production & Market Trends 2010. U. Certified
- Vorley, B (2003) *Food, Inc: Corporate Concentration from Farm to Consumer*, London: UK Food Group, 2003, at <http://www.ukfg.org.uk>

- Walker, B. and Salt, D. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*, Washington DC: Island Press
- Weatherspoon, D and Reardon, T (2003) The Rise of Supermarkets in Africa: Implications for Agrifood Systems and the Rural Poor, *Development Policy Review*, 21 (3)
- Westphal, C., I. Steffan-Dewenter, et al. (2003). "Mass flowering crops enhance pollinator densities at a landscape scale." *Ecology Letters* 6(11): 961-965.
- White, H (2009), *Theory-Based Impact Evaluation: Principles and Practice*. The International Initiative for Impact Evaluation (3ie)
http://www.3ieimpact.org/admin/pdfs_papers/51.pdf
- Williams, A. G., E. Audsley, et al. (2010). "Environmental burdens of producing bread wheat, oilseed rape and potatoes in England and Wales using simulation and system modelling." *International Journal of Life Cycle Assessment* 15(8): 855-868.
- Wood, R., M. Lenzen, et al. (2006). "A comparative study of some environmental impacts of conventional and organic farming in Australia." *Agricultural Systems* 89(2-3): 324-348.
- Young, CW; Hwang, K; McDonald, S; Oates, C (2010) Sustainable consumption: green consumer behaviour when purchasing products, *Sustainable Development*, 18, pp18-31.