MANAGING PERFORMANCE IN FOOD SUPPLY CHAINS

A DISCUSSION ON THE IMPACTS, OPPORTUNITIES AND CHALLENGES ARISING FROM MANAGING FOOD SUPPLY CHAIN PERFORMANCE AND PROTECTING BOTH PRODUCER AND SUPPLIER REPUTATIONS

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SGS

ABSTRACT

This white paper describes some of the steps that can be taken to prevent adverse food supply chain related incidents and improve the performance of supply chains. Taking these actions has the additional benefit of protecting and enhancing the reputation of the organisations involved.

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I. EXECUTIVE SUMMARY

Food supply chain performance management is key to meeting the growing consumer demand for products that are safe, of high quality, sustainably produced, and of assured provenance. A well-managed supply chain has social, environmental and economic benefits. The reputation of the raw materials from suppliers, and the reputation of a manufacturer or product distributor, cannot be left to chance. Implementing a recognised and certified supply chain management system means supplier risk is reduced, performance and cost effectiveness increased, and the reputation of all involved is enhanced. Organisations audited and certified through approved schemes increase their chances of being a chosen supplier to retailers and/or manufacturers who demand their suppliers hold approved certification. This can be further supplemented by customised audits bespoke to the specific needs of the organisation.

Today, the majority of food products meet consumer expectations. However, there are still cases of reported consumer-related food incidents. For those organisations involved in any reported incident, it can mean costly product recalls, market withdrawals or safety alerts. Food supply chain performance management aims to ensure the safety, quality and authenticity of food for consumers and organisations.

Benchmarks have been introduced against which all food safety standards can be tested. Certifying against food sustainability standards for primary production and chain-of-custody verification increases the credibility of an organisation with both consumers and the food industry. Compliance to recognised standards proves that an organisation is producing or handling food in accordance to globally recognised best practices.

The systems and standards discussed in this white paper establish management systems and processes that improve the efficiency and performance of food supply chains globally.

II. INTRODUCTION

**THE MANAGEMENT
OF FOOD SUPPLY CHAINS**

Modern consumers demand a variety of both local staple foods and exotic foods; and they expect products from either category to always be of the highest quality, affordability and safety.
In response to this ever-growing demand, the 'farm to fork' food supply chain has grown and now involves many types of organisations, some directly involved in producing food (eg farms) and others less directly (eg food processing equipment manufacturers), and they all can influence the success or failure of supplying safe, wholesome food to consumers.

The supply chain can be simple or complex, and the organisations small, medium or large. Distribution by sea, rail, road, or air, and the diversity of foods and processes, means there is a range of high and low risk factors in the supply chain. With so many variables, ensuring effective supply chain management is a challenging process.

For example, in the US more than 2.1 million farmers and producers supply over 26 000 manufacturers and processors, who in turn sell to 33 000 wholesalers and distributors. The wholesalers and distributors then supply more than 580 000 food service vendors (commercial catering outlets) and 210 000 retailers. This totals nearly 3 million stakeholders through the entire supply chain and its value is estimated to generate $1 trillion in US consumer sales each year and a further $115 billion in exports (Pullman and Wu, 2012). The sales revenue (including business to business and consumer sales) for each sector of the food supply chain is given in the table below.

BASIC US FOOD SUPPLY CHAIN STATISTICS (SOURCE PULLMAN & WU, 2012)

	FARMERS AND PRODUCERS	MANUFACTURERS AND PROCESSORS	WHOLESALERS AND DISTRIBUTORS	FOOD SERVICE VENDORS	RETAILERS
NUMBER OF ENTITIES	> 2.1 million	> 26,000	> 33,000	> 580,000	> 210,000
SALES REVENUE	$375 billion	$540 billion	$600 billion	$580 billion	$548 billion
STRUCTURE	125,000 farms control 75% of the sector	100 firms control 75% of the sector	50 firms control 50% of the sector	3 companies control most foodservice management contracts*	20 firms control 60% of the sector

Foodservice management contracts exist between private catering providers and public and private institutions such as hospitals, colleges and military establishments.

Food supply chains can be local, global, seasonal or year-round, and comprise:

- Direct Contributors: primary producers, ingredient suppliers, food manufacturers, packaging suppliers, transport and storage providers, wholesalers, brokers and agents, retailers and catering outlets including commercial (restaurants) and non-commercial (private catering)

- Indirect Contributors: such as service providers (water, waste disposal), equipment manufacturers (process equipment and vending machines), biochemical manufacturers (additives, vitamins, pesticides, drugs, fertilisers, and cleaning agents) and animal feed producers

It is increasingly important to proactively manage risks on quality, safety, provenance, and responsible sourcing of materials in your supply chain.

SUSTAINABLE FOOD SOURCES

Food Manufacture magazine reported in January 2013 that: *'Leatherhead Food Research (LFR) predicts that sustainability will continue to rise up the corporate agenda in 2013, with emerging markets becoming increasingly important and commodity prices continuing to rise. Poor harvests have put pressure on resources and this is exacerbated by emerging markets consuming more themselves. The populations, life expectancy, economic output and spending power of these emerging markets will continue to outpace that of more developed countries.'* Under such conditions, it becomes increasingly important to proactively manage quality, safety, provenance, and responsible sourcing of materials in your supply chain. These are the criteria that will secure long-term competitiveness.

RECALLS

In 2012, the US Food and Drug Administration (FDA) listed nearly 360 food products for human consumption that were the subject of recall, market withdrawal or safety alerts. The major recall in terms of number of products was related to the manufacture of a salmonella contaminated organic peanut butter which resulted in more than 100 other products being adversely affected.

Recall UK (a leading UK consumer product portal that records UK recalls), stated in their Annual Product Recall Report in 2012 that there had been a significant increase in food recalls in

2012 compared to 2011. These figures, taken from the official UK Food Standards Agency, were up 15% on 2011 (with 92 recalls). The main cause of concern was missing/incorrect allergen information, which showed a 57% increase. Most of these cases were due to the manufacturer putting the wrong product in the package rather than putting the wrong allergen information on the package. There was a reduction in the number of food products recalled because of contamination (chemical, biological and physical), which was down 12.5% on 2011.

See the table below for a breakdown of the UK food recalls for 2012.

FOOD RECALL DATA FROM: RECALL UK ANNUAL REPORT 2012	
REASON FOR FOOD RECALL	**NUMBER OF UK FOOD RECALLS IN 2012**
Missing allergen information	44
General contamination	24
Bacterial contamination	11
Other	8
Incorrect data code	4
Bottle or package issues	1
TOTAL	**92**

FINANCIAL IMPACT OF RECALLS

The financial cost of a recall can be a major blow to a business. In July 2012, a UK soft drink manufacturer recalled a popular 'drink-from-the-packet' children's fruit drink due to concerns related to a new style of cap being damaged during the manufacturing process, which could result in the possibility of choking or lacerations. The manufacturer expected to lose up to £5 million but subsequent delays in getting a suitable replacement cap manufactured meant estimated losses rose closer to £25 million.

This proved a significant financial loss to the company, over a quarter of its own market value (£96 million). Fortunately, there were no known injuries resulting from the faulty cap.

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FOODBORNE ILLNESS

Some food related incidents do, however, result in serious illness and even fatality. According to the US Centres for Disease Control and Prevention (FDA, 2011) about 48 million people (1-in-6 Americans) get sick annually; and of these 128 000 are hospitalised, and about 3 000 die from foodborne diseases. This is a significant public health burden, which the FDA believes is largely preventable. According to the UK Health Protection Agency, one million cases of foodborne illness are reported in the UK each year, hospitalising more than 20 000 people and killing around 500 (FSA, 2010).

III. SUPPLIER SOURCING – VERIFYING A SUPPLIER'S REPUTATION

Product quality, safety and sustainability criteria are reliant on many things (eg the standard of the raw materials used and the capabilities of all supply chain partners). The reputation of suppliers, manufacturers and distributors is a key risk factor that requires comprehensive assessment. There are a number of steps towards achieving this:

Step 1: supplier background checks

A supplier's background should be checked to make sure they meet all the necessary legal requirements as a registered food business operator. This also shows whether they have a history of legal noncompliance orders. The supplier's food safety policy, HACCP plan, pre-requisite programmes, and monitoring records are a good place to start, together with evidence to demonstrate that a legally compliant traceability and product recall or withdrawal system is in place. Customer complaint records and any history of product recall or withdrawal are also important to review. Any organisation that needs to be alerted to product issues as they arise can register to receive governmental food safety alerts and product recall notices.

Hazard Analysis of Critical Control Points (HACCP) is a cornerstone of global food safety practices. Recommended by Codex Alimentarius in its international code of practice for food hygiene (WHO/

FAO Codex Alimentarius Food Hygiene, 4th edition, 2009) it has become a requirement in national and regional food safety regulations. The US FDA Food Safety Modernisation Act (FSMA) documented HACCP plan contains five elements and requires maintenance of records for at least two years:

1. Hazard analysis
2. Preventative controls
3. Monitoring
4. Corrective actions
5. Verification

In 2011, the FSMA required US food companies to implement HACCP plans by June 2012. In Europe, Regulation (EC) 852/2004 on the hygiene of foodstuffs, article 5, states that food business operators must implement a food safety management system based on HACCP principles.

Step 2: check the supplier is certified against a recognised food standard

A supplier should meet the requirements of a recognised food standard, preferably independently assessed by an approved Certification Body (CB). If unsure whether or not a CB is approved, ask the Accreditation Body (AB) for details. This information is often available on the ABs website (eg UKAS) or a food standard owners' website (eg GlobalGAP).

Step 3: establish delivery specification

What will be delivered to customers should be established and agreed. Specifications must be set and suppliers should confirm that they are able to deliver precisely what is agreed, including the quality, quantities, scheduling, and pricing.

Step 4: carry out supplier audits and inspections

Supplier audits and inspections need to be carried out against relevant standards and specifications. Alternatively, a competent auditing and certification body can perform this assessment.

Step 5: maintain an approved suppliers list

Organisations in the food supply chain should maintain an approved suppliers list and regularly reassess the listed companies. A procedure should be in place to follow-up on complaints and suppliers should be de-listed if they do not meet expectations. Many food standard schemes have a list of suppliers that have been approved and certified. Organisations should avoid suppliers if there is any doubt and contact the local food authority with any concerns. Using a competent CB to audit suppliers, and even working with suppliers so that they can improve and meet expectations, is another solution.

IV. **IMPORTANCE OF TRACEABILITY SYSTEMS** IN FOOD SUPPLY CHAIN MANAGEMENT

Traceability is an integral part of food law designed to protect the consumer from food safety risk, fraud and quality issues; it is reflected in the international Codex Alimentarius Guideline CAC/GL 60-2006: *'Principles for traceability and product tracing, as a tool within a food inspection and certification system'.*

This describes food traceability as one of a number of tools that may be used within a food inspection or certification system. It states a traceability tool does not in itself improve food safety outcomes but it must be combined with other measures. While food traceability systems are important in minimising the impact of a food safety incident and in reducing the risk of one happening, it is not a substitute for an integrated FSMS built around HACCP.

An internal traceability system assists in the rapid identification of failure at any stage in the production process.

TRACEABILITY REQUIREMENTS

The European Parliament laid down the general principles of food law, establishing the European Food Safety Authority and the principle EU measures for food safety (EU 178/2002) in January 2002. It made clear that food traceability requirements would cover all food and feed business operators and importers. The EU defines food traceability as: *'The ability to track any food, feed, food producing animal or substance that will be used for consumption, through all stages of production, processing and distribution…'* and adopted the minimum traceability of, 'one step back – one step forward approach' for food businesses.

This committed Europe to provide measures for targeted withdrawal of foods and to provide consumers with accurate information on implicated products. While many European countries already had measures in place, this was a major step forward for a pan European policy in food safety control.

In January 2011, the US introduced the FDA FSMA, signed into law by President Obama (FDA, 2011). This major overhaul in US food safety policy committed the Secretary of State to: *'establish a product tracing system to track and trace food that is in the United States or offered for import into the United States.'* A practical way for the FDA to handle this would be to automate the capture and uploading of tracking data to an online database. A web-based system would allow officials to manage recalls more efficiently while storing data securely. However, such a database does not exist, and there are many issues needing to be resolved, for example in regarding who would be responsible for the storage and management of the data.

There is no legal requirement for an internal traceability system, but many manufacturers put internal traceability systems in place from raw material to dispatch. This assists in the rapid identification of failure at any stage in the production process. Globally recognised FSMS have included requirements for internal traceability to give businesses better control of their product integrity and greater customer assurance that if things do go wrong, it will be easier to trace the source of the problem. All of this helps when it comes to protecting brands and brand reputation.

TRACEABILITY EVIDENCE SUPPORTS PROVENANCE CLAIMS

Traceability is used, not only for safety and quality assurance, but also for making specific identity preservation, provenance and authenticity claims. These include claims for: organic and pesticide free production; cultural or religious items (eg halal and kosher food); place of origin (eg Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI)); and sustainably produced foods (eg tea, coffee, cocoa, soy, and fish). All these claims can be verified by food management system standards that include a traceability mechanism designed for the product in question.

The Norwegian Institute of Food, Fishery and Aquaculture (NOFIMA) is developing and testing fish traceability systems worldwide, with the aim of improving the sustainable management of our globally threatened fish stocks and assisting businesses to be more competitive. Dr Kathryn Donnelly, Marine Scientist with NOFIMA, has defined the triggers for having a traceability system as: food safety; legislation; certification; documentation of sustainability; competitive advantage; chain communication; and labour or cost reduction. These triggers apply to all organisations in the food supply chain.

TECHNOLOGIES SUPPORTING TRACEABILITY

As a legal minimum, a traceability system must be able to record the address of the supplier or the customer, what was supplied, the quantity, and the dates of the transactions and delivery. Where applicable the item's batch number or shelf life should also be recorded and common practice now is the use of an electronic bar code system in addition to clear consumer product labelling. Traditionally, traceability systems were paper-based with logbooks and visual labelling; but

the food industry is now relying and investing in computer-based systems. The Canadian Ministry of Agricultural and Rural Affairs gives examples of how some small agri-food businesses have introduced computerisation into their traceability systems.

Radio frequency identification (RFID) transmits product information using radio waves and is becoming the industry norm for supply chain management of product traceability information. RFID manages and updates information on food materials (product identity, supplier, serial number) as they enter and move through the 'farm to fork' chain. A computer system receives information from a reader, which is stored and interpreted. Unlike traditional barcodes, which require a direct line-of-sight for individual laser scanning, multiple RFID tags are read simultaneously when they pass within range of a reader. Barcodes only provide generic information, such as product class; however, RFID tags uniquely label every pallet, box or individual item.

Managing advanced traceability technology requires a clear policy with implemented procedures for its use and adequate staff training and briefing. Regular testing of the traceability system needs to be carried out including a full product recall procedure. This is referred to as mock recall and most FSMS require this to be done at least every 12 months. Aspects of the system including record keeping, documented procedures, and notification of key external contacts, as well as checking that staff understand their duties, needs monitoring as part of planned internal food quality and safety management system audits.

Dr Andrew Cannavan, from FAO/IAEA's Agriculture and Biotechnology Laboratory, reports that analytical laboratory techniques are valuable as part of traceability verification and fraud prevention; and techniques used include mass spectrometry, gas chromatography, radioisotope measurements, and DNA sequencing. While these are expensive techniques, they provide valuable additional information to support fraud and contamination claims in the supply chain, and can be used as part of a surveillance or sampling exercise to verify traceability systems.

TRACEABILITY SYSTEMS

Some FSMS standards have published guidelines on implementing traceability. ISO 22005: 2007, part of the ISO 22000 series of standards, contains general principles and basic requirements for system design and implementation for traceability in the food and feed chain. The UK Stationery Office has published the BRC Best Practice Guideline: *'Traceability: Issue 2, 2008'*.

Traceability systems do need to be appropriate to the size and nature of the business for efficiency and cost effectiveness; and it is the provision of information, not the format, that is most important. Being co-operative and sharing traceability and product recall data when required with customers, suppliers and food authorities, is essential to minimise the risk of an incident and demonstrate due diligence. The sooner an unacceptable product is withdrawn, the less the damage to the business reputation and brand image, and ultimately, to the food sector as a whole.

PEANUT BUTTER RECALL

As previously stated, in November 2012, a landmark food safety incident occurred in the US involving the closure of a New Mexico peanut butter plant suspected of producing salmonella contaminated organic peanut butter. This was a landmark case because for the first time, the FDA used new powers to suspend the registration of a company suspected of causing an incident to prevent it from resuming production after a period of voluntary closure. More than 100 products were recalled following the unfortunate illness of dozens of people across 20 US states.

This new food safety law to halt operations at facilities that may be producing unsafe food was enacted in the Food Safety Modernisation Act (FSMA). Before the new law, the FDA would have had to go to court to suspend a company registration. Michael Taylor, the FDA's deputy commissioner for foods commented: *"the ability to shut down the company's operations is a step forward in an FDA effort to stem a growing number of widespread outbreaks like the salmonella illnesses linked to the peanut butter."*

V. SUPPLIER MANAGEMENT

GLOBAL FOOD SAFETY MANAGEMENT SYSTEMS AND THE GLOBAL FOOD SAFETY INITIATIVE (GFSI)

It is now widely accepted that third party auditing and certification to globally recognised food safety management system standards is the preferred way for organisations in the food chain to demonstrate that they meet food safety regulations and operate best practice.

Internationally and regionally accredited CBs carry out auditing and certification and many customer organisations in the food chain now demand third party certification of their suppliers' FSMS.

THE RELATIONSHIP BETWEEN AUDITING, CERTIFICATION, ACCREDITATION AND BENCHMARKING OF FOOD SAFETY MANAGEMENT SYSTEMS (FSMS)
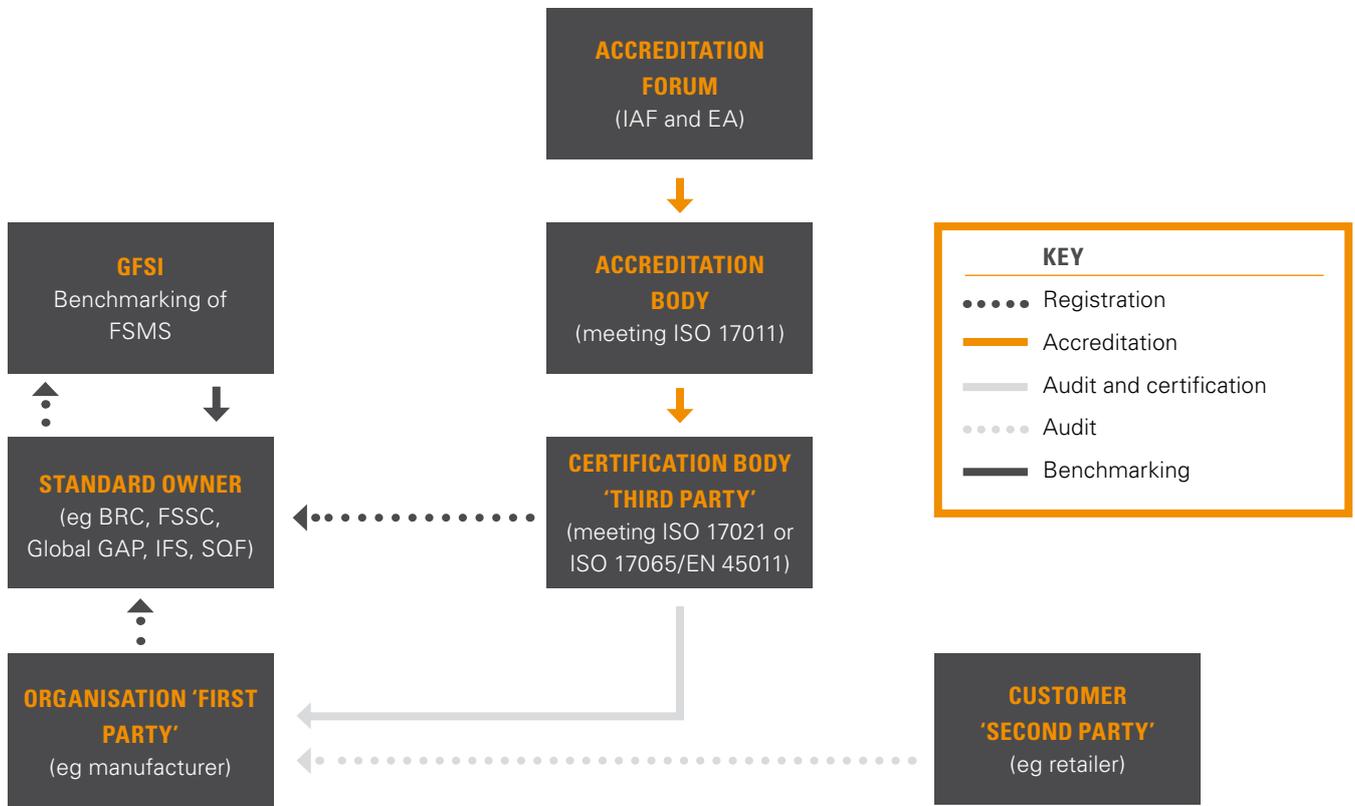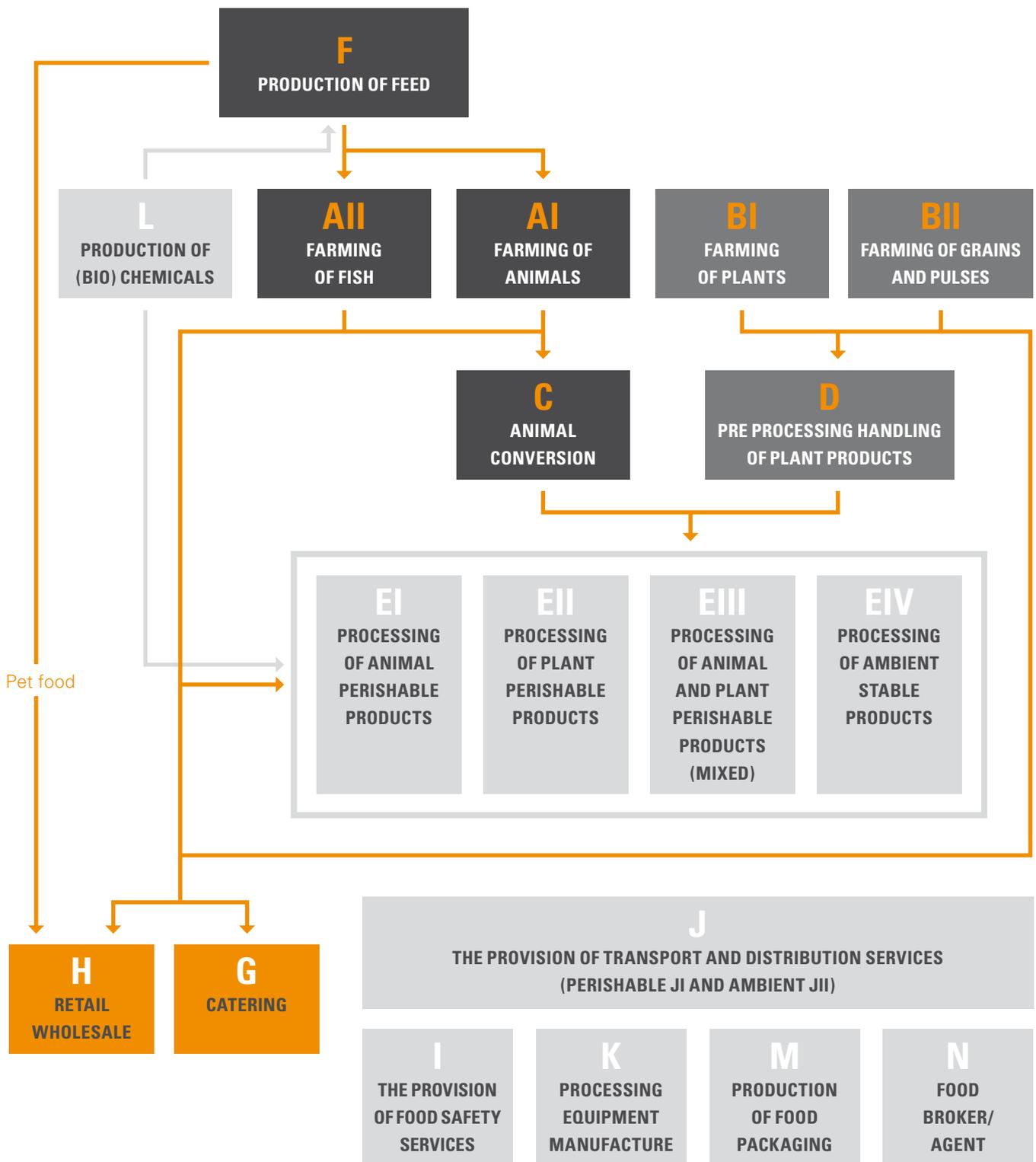

In response to a number of food safety incidents, a group of international retailing CEOs met in May 2000 with the aim of enhancing food protection and ensuring consumer protection and increased confidence in the food industry. They set up the Global Food Safety Initiative (GFSI), a non-profit foundation governed by the GFSI Board and Advisory Council, and operated through the Consumer Goods Forum. This brings together leading food experts from retailers, manufacturers and food service

companies to collaborate with experts from government departments, AB and CB bodies. This has made a powerful impact on the food chain community by setting requirements for FSMS and subsequently benchmarking various schemes against these requirements.

The GFSI drew up a set of criteria to be incorporated into FSMS, based on the requirements of the Codex General Principles of Food Hygiene Code of Practice. These are regularly reviewed by GFSI to ensure relevance to the issues faced by the industry such as

developments in incident management, food defence and allergen management. All GFSI recognised schemes have additional requirements such as internal audit, and product or ingredient traceability, which knit together with the Codex principles to add robustness to the scheme, and meet basic legal requirements. The requirements are based on HACCP principles, FSMS and prerequisite programmes (eg GMP) with specific sector requirements. The food supply chain sectors defined by GFSI are presented in the table on the next page.

F
PRODUCTION OF FEED

L
PRODUCTION OF (BIO) CHEMICALS

AII
FARMING OF FISH

AI
FARMING OF ANIMALS

BI
FARMING OF PLANTS

BII
FARMING OF GRAINS AND PULSES

C
ANIMAL CONVERSION

D
PRE PROCESSING HANDLING OF PLANT PRODUCTS

EI
PROCESSING OF ANIMAL PERISHABLE PRODUCTS

EII
PROCESSING OF PLANT PERISHABLE PRODUCTS

EIII
PROCESSING OF ANIMAL AND PLANT PERISHABLE PRODUCTS (MIXED)

EIV
PROCESSING OF AMBIENT STABLE PRODUCTS

Pet food

J
THE PROVISION OF TRANSPORT AND DISTRIBUTION SERVICES (PERISHABLE JI AND AMBIENT JII)

H
RETAIL WHOLESALE

G
CATERING

I
THE PROVISION OF FOOD SAFETY SERVICES

K
PROCESSING EQUIPMENT MANUFACTURE

M
PRODUCTION OF FOOD PACKAGING

N
FOOD BROKER/ AGENT

*Some scopes are still to be determined by the GFSI and so are not available for benchmarking.

GFSI RECOGNITION OF FOOD SAFETY SCHEMES (AS OF JANUARY 2013)

GFSI FOOD SUPPLY CHAIN SECTORS	SCOPE RECOGNITION OF FOOD SAFETY SCHEMES
AI Farming of Animals	SQF
AII Farming of Fish	SQF*
BI Farming of Plants	CanadaGap, GlobalGap, Primus GFS, SQF
BII Farming of Grains and Pulses	Primus GFS, SQF*
C Animal Conversion	FSSC 2200, GRMS, SQF, IFS**
D Pre Processing Handling of Plant Products	BRC, CanadaGap, FSSC 22000, GlobalGap, Primus GFS, SQF, IFS**
EI Processing of Animal Perishable Products	BRC, FSSC 22000, Global Aquaculture Alliance, GRMS, IFS, SQF
EII Processing of Plant Perishable Products	BRC, FSSC 22000, IFS, Primus GFS, SQF
EIII Processing of Animal and Plant Perishable Products (Mixed Products)	BRC, FSSC 22000, GRMS, IFS, Primus GFS, SQF
EIV Processing of Ambient Stable Products	BRC, FSSC 22000, IFS, Primus GFS, SQF
F Production of Feed	
L Production of (Bio) Chemicals	BRC, FSSC 22000, SQF
M Production of Food Packaging	BRC, FSSC 22000, SQF

Currently excluded – awaiting ten certificates before re-submission for benchmarking in accordance with Guidance document

*** Scope extension covered in current application*

The table refers to food safety schemes already benchmarked against the requirements of the GFSI Guidance Document 6th edition: SQF 7th edition, level 2; BRC Global Standard for Food, issue 6; IFS Food version 6. It also covers food safety schemes to be or in the process of being benchmarked against the requirements of the GFSI Guidance Document 6th edition: CanadaGAP; FSSC 22000 Food Products; Global Aquaculture Alliance Seafood Processing Standard; GlobalGAP; Global Red Meat Standard (GRMS); Primus GFS. For all updates consult the GFSI website: http://www.mygfsi.com/about-gfsi/gfsi-recognised-schemes.html

The GFSI established common procedures for the accreditation of certification bodies responsible for verifying the implementation of these standards. This involved gaining recognition from the International Accreditation Forum (IAF) and the European Accreditation Forum (EA), whose members, the ABs, accredit CBs to ISO 17065 and ISO 17021; and in the case of ISO 22000 to ISO/TS 22003 and ISO 17021.

With the GFSI requirements in place, the final step was to benchmark FSMS to see if they meet the requirements for GFSI recognition. The benchmarked schemes were deemed equivalent in core FSMS requirements but not identical because they differ in their market focus. The message from the GFSI Conference in 2012 was unanimous – stakeholders need to accept this equivalence to reduce the burden of audits. As the GFSI Chairman stated: *'Once certified, accepted everywhere.'* Food industry leaders' enthusiasm for this approach is unquestionable.

The major food safety schemes, which are currently benchmarked (or in process) against the GFSI, 6th edition, guidance document requirements, include:

- BRC Global Standards
- CanadaGap
- FSSC 22000
- Global Aquaculture Alliance
- GlobalGap
- GRMS
- IFS
- Primus GFS
- SQF

BRITISH RETAIL CONSORTIUM (BRC) GLOBAL STANDARD (MANUFACTURING, STORAGE AND DISTRIBUTION, PACKAGING, CONSUMER PRODUCTS)

The British Retail Consortium (BRC) has developed a set of four certification standards covering the supply chain with the objective of specifying requirements for product safety, quality and legality. They include:

- BRC Global Standard for Food Safety
- BRC Global Standard for Storage and Distribution
- BRC IOP Global Standard for Packaging and Packaging Materials
- BRC Global Standard for Consumer Products

The Global Standard for Food Safety was one of the very first standards recognised by GFSI. The Global Standard for Packaging became the first GFSI recognised food packaging standard (September 2012). The BRC standards currently certify suppliers in over 100 countries.

CANADAGAP (PRIMARY PRODUCTION)

CanadaGAP is referred to as an 'on-farm safety program' and combines national food safety standards with a certification system for the safe production, storage and packing of fresh fruits and vegetables. It is crop specific with six different HACCP based sets of good agriculture practices, recognised by the GFSI.

FOOD SAFETY SYSTEM CERTIFICATION FSSC 22000 (FOOD AND PACKAGING MANUFACTURING)

Owned by The Foundation for Food Safety Certification, the FSSC 22000 combines the ISO 22000 FSMS with a set of pre-requisite programme (PRP) requirements. For food manufacturing, these PRPs are provided by ISO/TS 22002-1. FSSC 22000 can be applied to a wide range of food manufacturing organisations irrespective of their size or the complexity of their food management processes.

GLOBAL AQUACULTURE ALLIANCE BEST AQUACULTURE PRACTICES (BAP) SEAFOOD PROCESSING STANDARD (FISH PRIMARY AQUACULTURE AND PROCESSING)

The BAP standards are more than food safety standards for aquaculture. Developed by the Global Aquaculture Alliance (GAA) the standards cover requirements for environmental, social responsibility, animal welfare, food safety, and traceability in a certification programme for aquaculture facilities. The standards cover the seafood supply chain from hatchery to feed mill, farm, and processing plant. Each BAP standard addresses community and employee relations, conservation and biodiversity, soil and water management, and drug and chemical management.

GLOBALGAP (PRIMARY PRODUCTION)

GlobalGAP is committed to supporting food safety and sustainability in the agriculture, livestock and aquaculture supply chains. It covers all aspects of the production process up to the farm gate. There are specific requirements for fresh fruit and vegetables, propagation materials, integrated farm assurance (livestock, dairy, pigs, poultry, combinable crops and grains, tea, coffee, and aquaculture), and flowers.

GLOBAL RED MEAT STANDARD (GRMS) (PRIMARY PRODUCTION, TRANSPORT AND INITIAL PROCESSING)

The Danish Agriculture and Food Council, in association with the Danish Co-operative of Slaughterhouses and the Danish Meat Institute, developed the GRMS. The standard is for the meat industry and covers all aspects of transport, lairage, stunning, slaughtering, deboning, cutting, and handling of meat and meat products.

INTERNATIONAL FEATURES STANDARD (IFS) (FOOD MANUFACTURE, BROKERING, LOGISTICS, CASH AND CARRY WHOLESALE, PACKAGING)

The IFS standard, developed by a group of German retailers in 2003, provided an alternative to the BRC standard for auditing food manufacturers' product, food safety and quality of processes. All major retailers across Germany, France, Italy, and many other EU countries require their suppliers to comply with the IFS food standard. The standard is currently operating its 6th version and more than 11 000 certificates were issued in 90 different countries in 2011.

IFS offers certification across a whole range of food processing, with the exception of agricultural primary production, with five audit and certification standards which cover the complete food supply chain for food, brokers, logistics, cash and carry wholesalers, and packaging guidelines. The IFS also has two levels of certification: 'Foundation' and 'Higher'.

PRIMUS GFS (PRIMARY PRODUCTION AND MANUFACTURING)

This is a food safety standard for agricultural products for human consumption in their fresh or minimally processed form. It sets requirements for managing the production, handling, processing, and storage, in terms of consumer safety. It covers the full supply chain from pre- to post-farm gate.

SAFE QUALITY FOOD (SQF) (PRIMARY PRODUCTION, FOOD AND PACKAGING MANUFACTURING, AND DISTRIBUTION)

The SQF code covers the entire food supply chain from primary production, ingredient manufacturing, packaging, food manufacturing, and distribution (7th edition applies to all industry sectors and replaces the SQF 2000 Code, 6th edition, and the SQF 1000 Code, 5th edition). SQF originated in Australia but is now owned by the Food Marketing

Institute (FMI) in the US and has a global reach of certified organisations. The SQF Code is a process and product certification standard. SQF Level 2 is a HACCP based food safety and quality management system that utilises the National Advisory Committee on Microbiological Criteria for Food (NACMCF) and the CODEX Alimentarius Commission HACCP principles and guidelines. The SQF can be achieved at three different levels. Level 2, which is compliant with HACCP food safety requirements, is GFSI approved.

In certain cases, the best solution are 'customised audits' that help organisations monitor the performance of the supply chain against their specific requirements.

CUSTOMISED SUPPLIER AUDITS

Whether it is managing food safety, quality, responsible sourcing, or the provenance of raw materials and finished products, each organisation has different needs. Most accredited standards are designed so that they can be applied to any organisation in the food chain or a specified food sector or category group. Certification to an accredited standard may also be a customer requirement. However, sometimes the best solution to verifying supply chain management are audits against an organisation's own bespoke requirements. These requirements can cover a variety of key issues such as food safety, food quality, health and safety, workplace rights, labour and human rights, environmental impact; and business integrity issues such as record management, anti-corruption and counterfeiting reviews.

Audits can also be conducted on a second party basis, whereby an independent a third-party organisation audits against a globally recognised protocol or customised standard on behalf of another client (eg SMETA for social audits on supply chains).

Auditing and certification bodies can provide auditing against supplier standards, in-house standards or design a standard that meets specific needs. They can undertake a gap analysis of an organisation's own standards against those of a globally recognised scheme, which can be combined with, or be in place of, certification to an accredited standard. Action plans can be created, along with an approved suppliers list, for overall improvements in the global supply chain.

Using a globally recognised independent audit and certification body for customised auditing, provides the following benefits:

- Independent and impartial auditors
- Depth and range of auditing competence
- Local offices and auditors in place around the globe
- Can provide training for suppliers on internal auditing and systems development
- Management of approved supplier and facility lists
- Added value through global supply chain issues identification
- Assured confidentiality
- Verification of in-house audit findings
- Help preparing for certification to an accredited scheme when needed
- Experience in managing complex, international audit programs.

This means an organisation can avoid the cost and complexity of managing an in-house supply chain auditing resource and be assured of receiving expert advice for the standards they wish to achieve.

SPECIAL TOOLS FOR SMALLER SUPPLIERS

In the FAO/WHO document, titled: *'Guidance to Governments on the Application of HACCP, in small and/or less developed businesses'* states that: *'within the food business sector in most countries, Small and Medium Enterprises (SME) account for the highest proportion of the Gross Domestic Product (GDP) and are responsible for producing a large share of the food consumed in a country. SMEs provide a significant proportion of the total employment in the food sector and make a vital contribution to the economic wellbeing of the community at the local level.'* (FAO/WHO, 2005).

Food Drink Europe marked 2012 EU SME week with the launch of its new SME website and confirmed on a European level the FAO/WHO statement with the following statistics (from 2010 data):

- 99.1% of Europe's 274 000 food and drink companies are SMEs
- SMEs account for 48.7% of turnover (€452 billion)
- SMEs account for 63% of employment (2.7 million jobs) in Europe's food and drink industry

GFSI has released its Global Markets Capacity Building Programme, a comprehensive step-by-step programme that guides small or less developed businesses through a continuous improvement process in their food safety management systems, thus facilitating local market access and creating mutual acceptance along the supply chain. The basic and intermediate level key requirements are drawn from

the GFSI Guidance Document and based on the Codex General Principles of Food Hygiene as well as a protocol to guide businesses through the programme. The toolkit includes food safety checklists and protocols, together with assessor guidelines for organisations at different levels of compliance. The ultimate goal is to achieve official accredited certification against one of the GFSI recognised schemes.

Alternatively, businesses may have their own programs in place that help their supplier network adopt the agreed GFSI certification program.

Many leading companies now view the integrity and sustainability of their supply chain as a source of competitive advantage.

GFSI GLOBAL MARKETS SCHEME

Many SMEs do successfully negotiate globally recognised, accredited FSMS certification and a number of schemes and CBs actively help smaller companies by providing guidance notes, training and pre-audit assessments. The ISO committee responsible for ISO 22000, has produced two resources to help small businesses with ISO 22000 implementation. These include ISO 22000 Food Safety Management Systems: *'An easy-to-use checklist for small business. Are you ready?'* (ISO, 2007) and 'How to use ISO 22000' (ISO, 2012). Further information for both documents is available from the ISO website.

Industry and government sponsored food safety schemes providing guidance, mentoring and assessment of SMEs can be found in a number of countries. In the UK, Safe and Local Supplier Approval (SALSA) is a food safety HACCP based standard that reflects both the legal requirements of producers and the

enhanced expectations of 'best practice' of professional food buyers. SALSA is a non-profit making joint venture between four main UK trade associations. These associations represent the UK food chain and include the BRC, the British Hospitality Association, the National Farmers Union, and the Food and Drink Federation. SALSA has issued more than 500 certificates and has become widely accepted among UK retailers and food service operators. It maintains a directory of certified suppliers, approved auditors and mentors. The standards and guidance documents are available from the SALSA website.

Many SALSA certified producers go on to achieve a globally recognised FSMS certification such as the BRC Standard. For example, Sainsbury's, a leading UK food retailer, states: *'[Sainsbury's] is working hard with the SALSA scheme to ensure that it delivers an effective means for small producers to demonstrate due diligence.'*

GFSI GLOBAL MARKETS SCHEME - THE FOUR PHASES

	Matching Level
GFSI RECOGNISED SCHEMES FOR MANUFACTURING	
	100%
GFSI GUIDANCE DOCUMENT REQUIREMENTS (6.1 EDITION)	70%
GLOBAL MARKETS — Basic and intermediate levels	
	30%
GLOBAL MARKETS — Basic level	
PHASE 1 PHASE 2 PHASE 3 PHASE 4	
12 months 12 months	
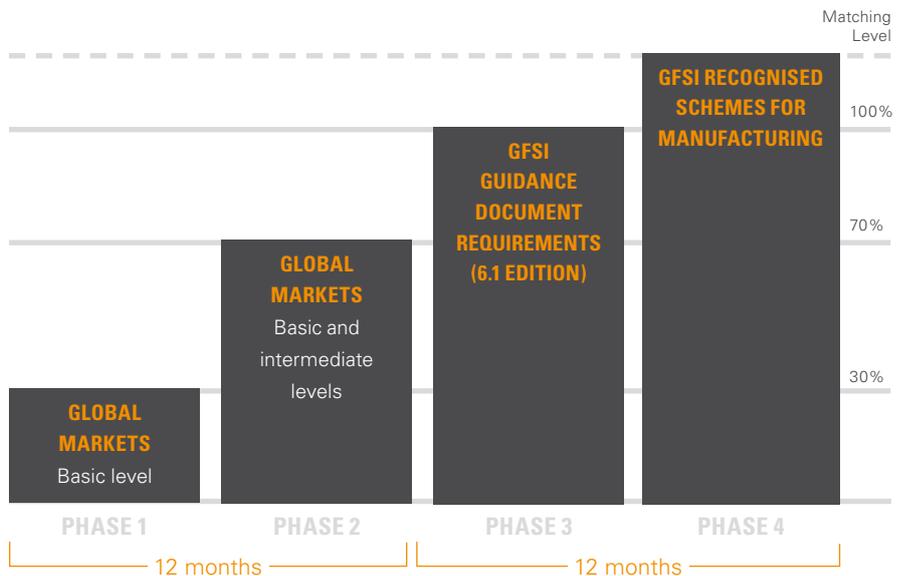
TOOLS TO VERIFY SUPPLY CHAIN INTEGRITY AND SUSTAINABILITY

PricewaterhouseCoopers in its article, *'From vulnerable to valuable – how integrity can transform a supply chain'*, defines supply chain integrity as *'balancing operational objectives with reputational risks'* (PwC, 2008). Supply chains face an ever-increasing challenge of delivering the right product, at the right cost, at the right time, and to the right place; while also addressing stakeholder demands for managing the environmental, social and economic impact of the business.

Many leading companies now rightly view the integrity and sustainability of their supply chain as a source of competitive advantage. Organisations are striving to increase their credibility and transparency with regard to these issues, and this has resulted in the development of auditable standards in the food chain, which cover social responsibility and sustainability for a range of products (eg soy, sugar, palm oil, tea, coffee, cocoa, fresh fruit and vegetables, and aquaculture). The table below gives a list of some of the certified sustainability and social responsibility standards that cover food including UTZ Certified, RSPO, MSC, GlobalGAP, Bonsucro, RTRS, and the ethical trading protocol SMETA.

According to the international standard on social responsibility ISO 26000, sustainable development is, *'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'* The goals of sustainable development are social, economic and environmental. Social responsibility is described as the, *'responsibility of an organisation for the impacts of its decisions and activities on society and the environment through transparent and ethical behaviour.'* The standard states that the core subjects of social responsibility that need to be addressed by an organisation are organisational governance, human rights, labour practices, the environment, fair operating practices, consumer issues, and community involvement and development.

An ethical approach to the food supply chain is essential if the demands of the 21st century are to be met, and a sustainable supply of food for the expanding world population to be achieved.

KEY SUSTAINABILITY AND SOCIAL RESPONSIBILITY STANDARDS COVERING FOOD

FOOD SUSTAINABILITY SCHEME	PRODUCTS	CERTIFIED SCHEME STANDARDS
UTZ Certified	Tea, coffee and cocoa	• Code of Conduct (agricultural production) • Chain-of-Custody (traceability)
Roundtable on Sustainable Palm Oil (RSPO)	Palm oil	• Oil Palm Plantation Management • Chain-of-Custody (traceability)
Roundtable on Responsible Soy (RTRS)	Soy	• Standard for Responsible Soy Production • Chain-of-Custody Standards (traceability)
Bonsucro Certification	Sugar	• Bonsucro Production Standard (includes chain-of-custody)
Marine Stewardship Council (MSC)	Aquaculture	• MSC Environmental Standard for Sustainable Fishing • MSC Chain-of-Custody Standard for Seafood Traceability
GlobalGAP	Crops, livestock and aquaculture	• localg.a.p • GLOBALG.A.P. • GLOBALG.A.P.+ Add-on • All 3 for crop, livestock and aquaculture
SEDEX/SMETA	Consumer goods (including foodstuffs)	• SMETA Best Practice Guidance

UTZ CERTIFIED

UTZ Certified is a worldwide certification programme launched in 2002 that sets standards for responsible agricultural production and sourcing of tea, coffee and cocoa. UTZ Certified (UTZ means 'good' in the Mayan language) provides the assurance of improved social, economic and environmental benefits for producers, and improved quality and efficiency in coffee, cocoa and tea production. UTZ Certified coffee, cocoa and tea has been produced according to the criteria of the respective UTZ Certified Code of Conduct.

UTZ Certified is one of the largest sustainability programmes for coffee, cocoa and tea in the world, and UTZ Certified sales increased in 2011 by an average of 60% (12% coffee, 150% cocoa and 50% tea). UTZ Coffee is currently grown in 23 countries, and sold in 50 countries, and one-third of all coffee that is sustainably grown is certified by UTZ.

All organisations in the tea, coffee or cocoa supply chains can be UTZ certified including producers, warehouses, traders, exporters, importers, manufacturers, processors, and retailers. If an organisation legally owns UTZ Certified products, processes the products, or makes product claims then it must be certified. There are two standards relating to code of conduct and chain-of-custody, for each product category.

The code of conduct is a set of criteria and control points for economic, social and environmentally responsible agricultural production, grouped into three areas:

- Traceability and general management system issues

- Good agricultural and farm practices

- Specific social and environmental aspects

Assessment is based on a continuous improvement concept over a four-year period with an annual audit. There are mandatory and additional control points, with the number of mandatory control points increasing each year, and certification can be individual, multi-site, group, or multi-group.

UTZ Certified has social, environmental and economic benefits. Social benefits for producers include having better access to education and healthcare, and improved working conditions. Environmental benefits include shade management, reduced water use and recycling of organic waste. Economic benefits for producers include increased productivity, efficiency and quality of products. Certification creates an open and transparent market, supporting producers in achieving a better price for safer, more sustainable products. Industries benefit from access to higher quality, sustainable products which can be bought and sold through the UTZ Good Inside Portal, verified from farmer to retailer by the chain-of-custody
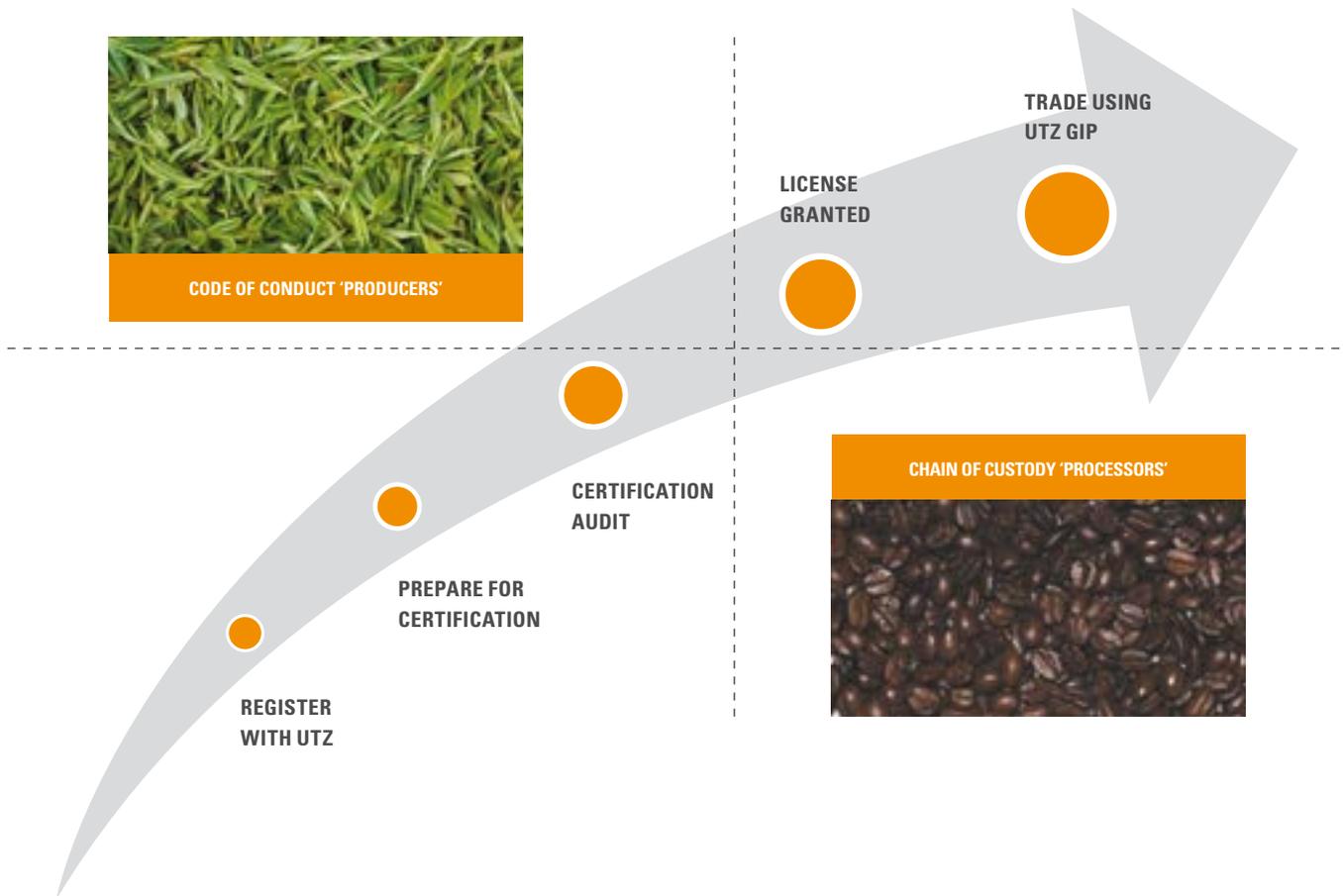
certification. Consumers benefit from knowing where the product has come from and how it was produced, enjoying brands they trust and products that meet their expectations.

The certification steps members need to take if they legally own products, process products or make product claims include:

- Register with UTZ Certified

- Prepare for certification (eg study the code of conduct or chain-of-custody standard, start implementing good practices, use the checklist for a self-assessment, consult the Certification Protocol)

- Certification audit from a UTZ approved CB

- Granted a licence (the CB uploads the licence certificate to the UTZ Good Inside Portal and UTZ Certified verifies the summary report and grants the licence)

Once the license is granted, an organisation can then trade using the UTZ Good Inside Portal, where a traceability system is accessible for buying and selling products.

CBs approved and registered with UTZ Certified must have a valid ISO Guide 65/EN 45011 accreditation that covers the scope of the UTZ standard, or another relevant agricultural scope, such as GlobalGAP.

CODE OF CONDUCT 'PRODUCERS'

TRADE USING
UTZ GIP

LICENSE
GRANTED

CERTIFICATION
AUDIT

CHAIN OF CUSTODY 'PROCESSORS'

PREPARE FOR
CERTIFICATION

REGISTER
WITH UTZ

THE ROUNTABLE SUSTAINABLE PALM OIL (RSPO)

The RSPO was established in 2004 to promote the production and use of sustainable palm oil. This initiative resulted from the increased global demand for vegetable oils, which could cause the expansion of plantations at the expense of forests, wildlife and communities. The RSPO founding organisations comprise the international consumer goods manufacturer Unilever, the Malaysian Palm Oil Association (MPOA), Migros (Switzerland's largest retailing company), AAK (producers of edible oils and fats), and the conservation organisation WWF. They realised that as palm oil was relatively cheap,

versatile and high yielding it needed to be sustainably produced. The RSPO consists of members from growers, processors, traders, consumer goods manufacturers, social, environmental NGOs, bankers, investors, and retailers; all governed by an appointed Board of Directors. The RSPO programme is managed by a secretariat, and volunteer experts are organised into committees and working groups to develop and maintain the scheme.

The key RSPO criteria and requirements for producers are:

- Compliance with local and international laws and regulations
- Demonstrated commitment to long-term economic and financial variability

- Use of agricultural best practices by growers and millers
- Environmental responsibility including conservation of natural resources and biodiversity
- Responsible consideration for employees and the community affected by cultivation or production
- Responsible management of new plantings
- Commitment to continuous improvement

CBs who audit compliance to the RSPO standards must be accredited by an IAF/EA or ISEAL approved AB to meet the requirements in ISO Guide 65/EN 45011. The RSPO reports that, as of 2012, RSPO certified palm oil plantations already cover an area approximately 22 times the size of Singapore (ie 1.6 million hectares of certified area), and this area is continuing to increase. In 2012, 37 companies with 175 mills have grower's certification producing over seven million metric tonnes of palm oil. There are 214 companies including 547 facilities with supply chain certificates. There are over 60 trademark licensees in 14 markets and more than 14% of palm oil globally is RSPO certified.

A joint report from the WWF, CDC and FMO in 2012 stated that: *'Research has found that many firms that switched to producing sustainable palm oil reaped significant returns on their investments. In some cases, switching to sustainable production was economically transformative for the business.'*

THE ROUNDTABLE ON RESPONSIBLE SOY ASSOCIATION (RTRS)

The RTRS is a multi-stakeholder initiative, which aims to facilitate a global dialogue on soy production that is economically viable, socially equitable and environmentally sound. It provides stakeholders and interested parties such as producers, social organisations, and business and industry with the opportunity to jointly develop global solutions leading to responsible soy production. Its members can benefit from certification to the standard for responsible soy production and the chain-of-custody standards. The audits are performed by recognised CBs. Over one million tonnes of RTRS certified soy has now been grown and processed.

BONSCUCRO

Bonsucro was born out of the Better Sugarcane Initiative, a global multi-stakeholder non-profit organisation dedicated to reducing the environmental and social impacts of sugar cane production. It is the first global metric standard for sugar cane production and processing. Independent CBs perform the audits and deliver the decisions on compliance against the Bonsucro standard requirements.

MARINE STEWARDSHIP COUNCIL (MSC)

MSC is a global organisation working with fisheries, seafood companies, scientists, conservation groups, and the public to promote environmentally responsible fishing practices and trade. It does this via two standards: the MSC Environmental Standard for Sustainable Fishing and the MSC Chain-of-Custody Standard for Seafood Traceability. Both standards are certified through accredited CB audits.

THE SEDEX MEMBERS ETHICAL TRADE AUDIT (SMETA)

The SMETA Best Practice Guidance standard was developed in response to the need for a standardised reporting and auditing format for ethical audits. Added to this, the protocol's aim is to be easily shared with greater transparency in relation to auditor qualifications and practices than was available previously. Audit report results can be shared by SEDEX members via upload to a members' portal.

SMETA encompasses social (eg labour and human rights), environmental, health and safety, business integrity, and management system practice. Individual clauses in the SMETA protocol cover:

- Management systems and code implementation
- Forced labour
- Freedom of association
- Health and safety
- Child labour and young workers
- Living wage
- Working hours
- Discrimination
- Regular employment
- Sub-contracting and home workers
- Discipline
- Entitlement to work
- Migrant and agency labour
- Environment
- Community benefits

Growth in SMETA auditing has been significant due to the largest global organisations in food and consumer goods embracing the SMETA protocol. SMETA is based on the Ethical Trading Initiative (ETI) foundations and therefore offers a comprehensive approach to raising the standard of social and environmental practices across global supply chains; the main reason why so many large and valuable global brands rely on SMETA auditing to give them assurance of their complex supply chains.

# VI. CONCLUSION

MEETING EXPECTATIONS

The diversity of the modern food supply chain and its ever-changing dynamics creates many challenges for the food industry. The majority of food organisations go beyond the requirements set out by regulatory bodies and aim to create even higher standards for themselves and their customers. One way of demonstrating compliance with the law, and best practice, is to become certified against one of the various globally recognised food safety management systems (FSMS). Encouraged by the work of the Global Food Safety Initiative (GFSI), many organisations, both large and small, are now adopting the GFSI principle of 'once certified, accepted everywhere'. This aims to recognise benchmarked schemes and reduce unnecessary supplier audits. However, it may be necessary in some instances to customise supplier auditing to meet specific needs. In these cases, assurances that supply chain processes are being monitored by an independent, competent and expert body can be given by using a globally accredited Certification Body (CB).

Product recalls and foodborne illness outbreaks still attract much media attention so the challenge to the food industry is continual improvement – a factor that must remain a key objective. Food safety is paramount but other factors are involved including the protection of the global environment, improvements in the quality of agricultural production, and giving those workers that produce food a reasonable standard of living, safe working environment and opportunities for their families to better themselves. This ethical approach to the food supply chain is essential if the demands of the 21st century are to be met, and a sustainable supply of food for the expanding world population to be achieved.

A number of schemes provide certification for sustainable food production and supply chain traceability. These schemes have standards that were developed collaboratively, with auditable standards certified by independent CBs. The tools are there to help organisations in the food supply chain meet their commitment to consumers, the environment and to social wellbeing; while at the same time helping them meet their own expectations of furthering excellence.
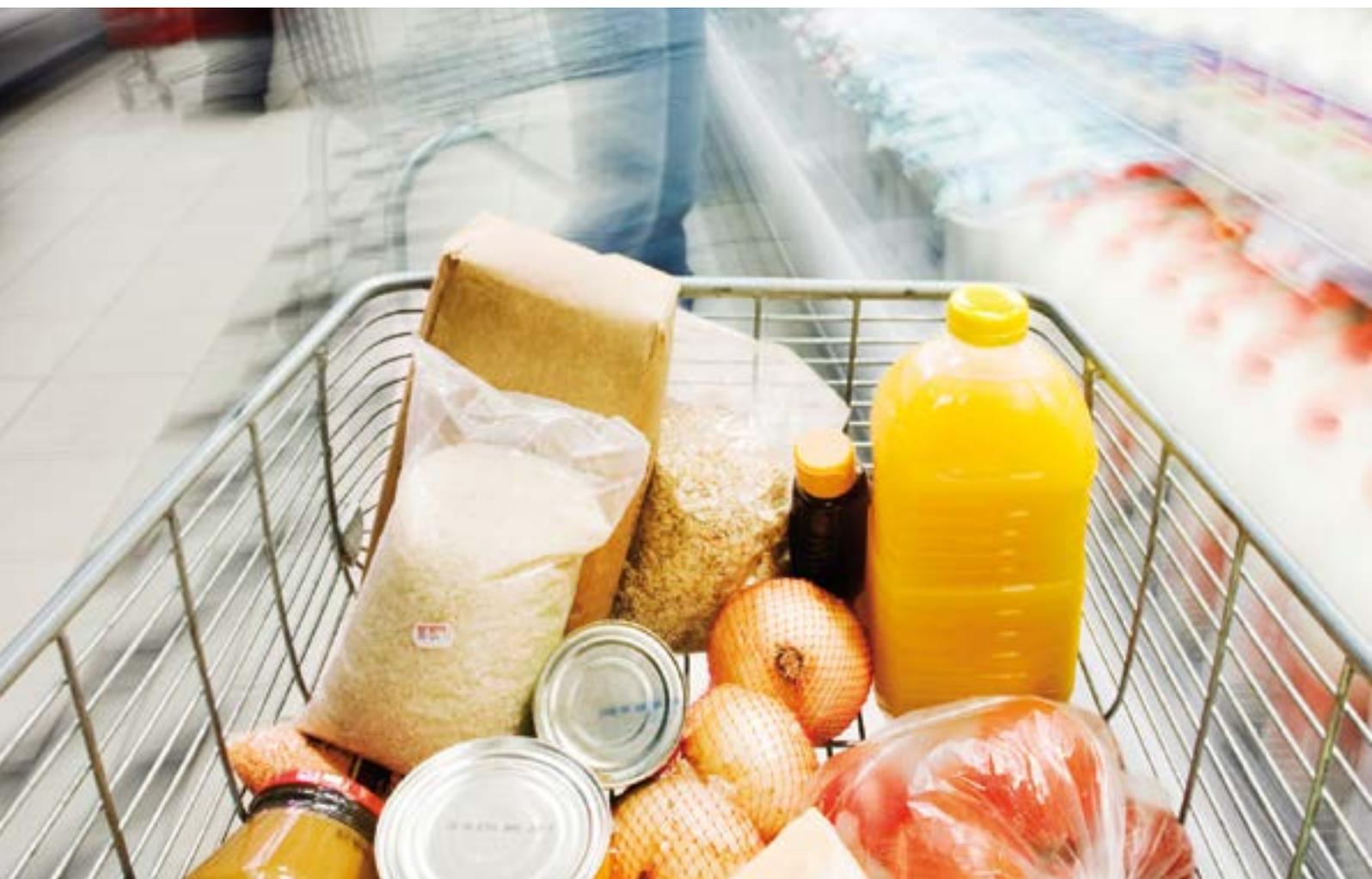
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ABOUT SGS

SGS is a leading independent third-party service provider offering efficient solutions to help safeguard quality, safety and sustainability throughout all stages of the global food supply chain. SGS can fulfil all your testing, certification, technical assistance, audit, inspection and verification needs.

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognised as the global benchmark for quality and integrity. With more than 75 000 employees, SGS operates a network of over 1 500 offices and laboratories around the world.

Enhancing processes, systems and skills is fundamental to your ongoing success and sustained growth. We enable you to continuously improve, transforming your services and value chain by increasing performance, managing risks, better meeting stakeholder requirements and managing sustainability.

With a global presence, we have a history of successfully executing large-scale, complex international projects. Our people speak the language, understand the culture of the local market and operate globally in a consistent, reliable and effective manner. We have a harmonised approach to delivering services to our customers, leveraging the largest independent network of consumer product experts in the world.

FOR MORE INFORMATION ON SGS SERVICES AND SOLUTIONS FOR MANAGING PERFORMANCE IN FOOD SUPPLY CHAINS VISIT WWW.SGS.COM OR CONTACT SUSTAINABLE-DEVELOPMENT@SGS.COM

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