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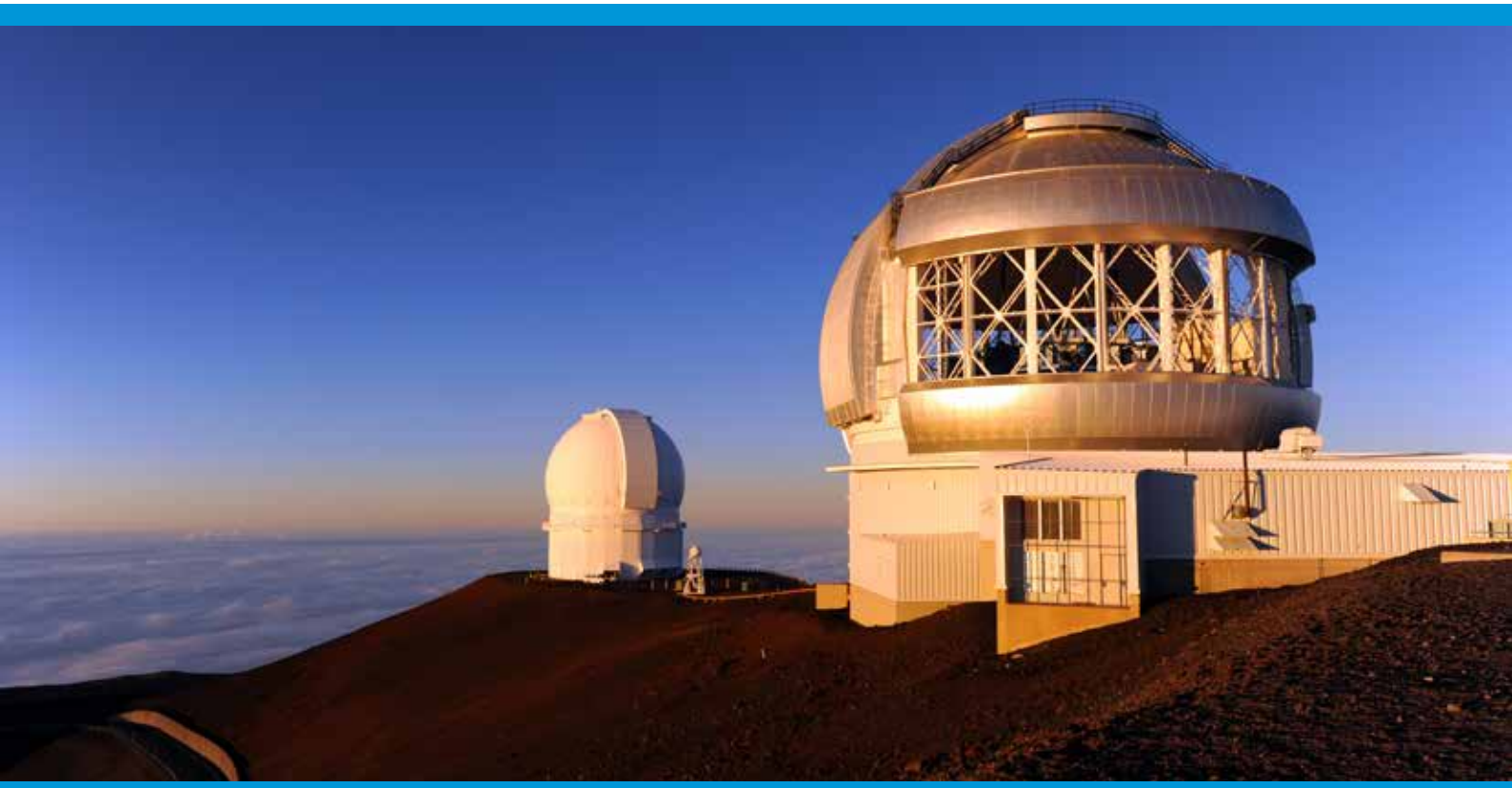

Meeting Standards, Winning Markets

Trade Standards Compliance 2015

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Acknowledgements

A comprehensive publication like the present second issue of UNIDO's Trade Standards Compliance Report requires collaborative efforts and the bringing together of multiple partners. This Report has benefitted from, and indeed is the outcome of such joint efforts and cooperation across many stakeholders.

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Any feedback, comments and suggestions on the report and the different analyses presented are welcome and can be addressed to tradestandardscompliance@unido.org.

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Acronyms

AQSIQ	Administration of Quality Supervision, Inspection and Quarantine, China
ASEAN	Association of Southeastern Asian Nations
AVA	Agrifood and Veterinary Authority, Singapore
BIPM	Bureau of Weights and Measures
BRC	British Retail Consortium
BRICs	Brazil, Russia, India and China
CAADP	Comprehensive African Agricultural Development Programme
CIPM	International Committee for Weights and Measures
CMC	Calibration and Measurement Capabilities
CSO	civil society organization
DRC	Democratic Republic of the Congo
EAC	East African Community
EC	European Community
ECOWAS	Economic Community of West African States
EP	European Parliament
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDA	Food and Drug Administration, United States
FIPs	Fishery Improvement Partnerships
FOB	free on board
FSC	Forest Stewardship Council
FSI	Food Safety Initiative
FSMA	Food Safety Modernization Act, United States
GAA	Global Aquaculture Alliance
GAP	Good Agricultural Practices
GDP	gross domestic product
GFSI	Global Food Safety Initiative
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis and Critical Control Point
HS	Harmonized Commodity Description and Coding System
IAF	International Accreditation Forum
IDH	Dutch Sustainable Trade Initiative
IEC	International Electrotechnical Commission
IFS	International Food/Featured Standard
ILAC	International Laboratory Accreditation Cooperation
ILO	International Labour Organization
IMF	International Monetary Fund
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ISEAL	International Social and Environmental Alliance
ISO	International Organization for Standardization
ISPM	International Standards for Phytosanitary Measures
ITC	International Trade Centre
KCDB	Key Comparison Data Base
LAC	Latin America and the Caribbean
LDC	Least developed countries
MCS	México Calidad Suprema
MPCA	Malaysia Phytosanitary Certification Assurance
MRA	Mutual Recognition Arrangement
MRL	Maximum Residue Levels
MSC	Marine Stewardship Council
MT	metric tonnes
NAB	National Accreditation Body
NGO	non-governmental organisation
NIB	national inspection bodies
NMI	National Metrology Institute
NPO	non-profit organization
NQP	national quality policy
NSB	National Standards Body
NTB	Non-Tariff Barriers
NTMs	Non-Tariff Measures
OASIS	Operational and Administrative System for Import Support, United States
OECD	Organization for Economic Cooperation and Development
OIE	World Organization for Animal Health
PC	principal component
PCA	principal components analysis
QI	quality infrastructure
R&D	research and development
RAB	Regional Accreditation Body
RASFF	Rapid Alert System for Food and Feed, EU
REC	Regional Economic Communities
RRRI	Relative Rejection Rate Indicator
RSPO	Roundtable on Sustainable Palm Oil
SADC	Southern Africa Development Community
SALM	Skim Akreditasi Ladang Malaysia
SDO	Standard Development Organizations
SME	small and medium enterprises
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
TC	technical committees
TSCCI	Trade Standards Compliance Capacity Indices
TSCR	Trade Standards Compliance Report
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
VHT	vapor heat treatment
WFF	World Forum of Fish Harvesters and Fish Workers
WTO	World Trade Organization
WWF	World Wide Fund for Nature

Foreword

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Both Norad and UNIDO firmly believe in the importance of trade for development. Both our organizations therefore welcomed the major breakthrough in the multilateral trading system represented by the adoption of the Bali Ministerial Declaration and a number of ministerial decisions at the 9th WTO Ministerial Conference in December 2013. One element of the package adopted at Bali was a Ministerial Decision on Aid for Trade, which recognized the continuing need of Aid for Trade for developing countries and which reaffirmed the continued commitment of WTO member states to this initiative. Norway and UNIDO have endorsed, and indeed have been major contributors to the Aid for Trade agenda from the beginning. The Trade Standards Compliance (TSC) Report is one of the contributions that UNIDO, with Norad's financial support, has been making in this regard.

The wide resonance of the first TSC Report, published in 2010, and the very positive feedback it has generated, have encouraged UNIDO to continue its work on systematically analyzing the challenges related to trade standards that developing countries face when seeking to deepen their integration into the global trading system. Successful participation in international trade requires, amongst other things, the ability to comply with trade standards and international market requirements. In line with the Aid for Trade spirit, this calls for multi-stakeholder cooperation as well as policy action to support trade and compliance capacity-building efforts. Lack of knowledge about trade standards is often a key constraint on the ability of developing countries to take full advantage of the export opportunities available to them. The TSC Report aims to fill these knowledge gaps and enhance transparency about trade standards.

In the increasingly dynamic and complex international economic context prevailing today, strategic decision-making more than ever needs to be based on, and informed by, hard facts and figures and thorough analyses. This is what the Trade Standards Compliance Report offers. Through its diagnostic tools and analyses, the report serves as an important tool for development partners to benchmark the compliance performance of individual countries against that of peers or competitors, thereby helping to identify country needs and priorities. It provides policy guidance and decision-making support to a variety of stakeholders.

The assessments of a country's trade standards compliance capacity presented in the report offer guidance to local policymakers on where investments in domestic compliance capacity-building and upgrading promise to be most rewarding. For development agencies and donors, the report highlights options for "smarter", better-tailored technical assistance and for a more effective allocation of trade capacity-building efforts. Much still remains to be done if developing countries are to fully reap the benefits of global trade but putting the insights from this report into practice should help them to improve compliance performance and trade competitiveness while at the same time contributing to more local consumer protection.

In the context of the Aid for Trade agenda, the TSC Report is also meant to serve as an advocacy tool for more and better-targeted, and thus more efficient and more effective, technical assistance to complement domestic development efforts in developing countries. Both Norad and UNIDO want international trade to unfold its full potential as an engine for economic growth, employment creation and poverty reduction, and thereby fulfill its natural role as a complement to inclusive and sustainable industrial and economic development. We are confident that this second Trade Standards Compliance Report will make a major contribution in an important area needed to reach this objective.

Rationale and Key Findings

The increasing importance of standards in international trade of agrifood products

The latest wave of globalization has been characterized by a remarkable process of market liberalization. With the completion of numerous rounds of multilateral, regional and bilateral trade negotiations, the world economy has seen a significant overall decline in tariff levels during the past couple of decades. However, despite the overall reduction in tariff levels, many developing countries have not been able to substantially increase their participation in global trade. Potential gains from tariff reductions have not been realized and in some cases even eroded due to an increased use of non-tariff barriers to trade. Among such non-tariff barriers one typically finds technical regulations and (public) standards. In addition, in recent years private standards have gained in importance and grown in number and are increasingly affecting and shaping international trade flows.

Technical standards for products and also for (production) processes are not new; they have been in existence for well over 100 years. Long before globalized trade took off, countries developed technical standards to guarantee consumer safety, increase transparency in markets, facilitate product compatibility, and ensure that products met consumer needs. In many cases, the compliance requirements placed on imported products are, in fact, simply the same as the requirements placed on domestic products. However, in the recent past, standards have been applied in international trade with growing intensity. On the one hand, this trend towards standardization and application of standards is driven by legitimate motives including consumers becoming more demanding regarding the safety and quality of products, managerial and technological innovations (e.g. in production processes and product design), as well as increased awareness and concern for social and environmental sustainability issues among many governments, consumers , non-governmental organizations (NGOs) and civil society organizations (CSOs). On the other hand, however, standards can be used in a way that hampers trade and, indeed, act as disguised protectionist measures (they are hence referred to as barriers). In a world of low tariff levels and far-reaching multilateral trade disciplines under the WTO, the ability of governments to arbitrarily impose or increase tariffs or quantitative restrictions on trade is limited so that they are sometimes tempted to resort to other means to restrict imports, including through the application of standards that have discriminatory consequences for trade partners (WTO 2005).

Trade-related standards and compliance challenges

Throughout this report, reference will be made to "trade standards". Indeed, even the title of this publication makes reference to "trade standards". It is therefore pertinent to briefly explain what is meant by "trade standards".

The term "trade standards", the way it is used here, corresponds to a meta-concept that encompasses different sub-categories. Broadly speaking, in the present report the term "trade standards" refers to all technical regulations, requirements and standards (and all measures based on them) related to quality and safety aspects of products which are used and applied in cross-border commercial transactions and which, thus, affect and shape international trade flows. That is, the term "trade standards" when used in this report can refer to technical regulations, to voluntary (public) standards and, in some occasions, also to (voluntary) private standards. The first two types are also known to and defined in the WTO Agreements on Technical Barriers to Trade (TBT) and on the Application of Sanitary and Phytosanitary (SPS) Measures – with the latter agreement being of relevance here because the focus of the analyses undertaken in this report is on the agrifood sector and on food safety and human health issues.

Let us briefly recall the definitions of these different concepts and terms. According to Annex 1 of the WTO Agreement on Technical Barriers to Trade (TBT), a technical regulation is a "[d]ocument which lays down product characteristics or their related processes and production methods (...) with which compliance is mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method." Technical regulations are, hence, based on standards with which compliance is compulsory and legally binding. A standard, by contrast, is defined by the WTO TBT Agreement to be a "[d]ocument approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is *not* mandatory" (*emphasis added*). In other words, the WTO TBT agreement covers both product standards and process standards and distinguishes between standards with which compliance is voluntary and those with which compliance is mandatory (with the latter being called "technical regulations").[1]

1 See the full text of the TBT Agreement on www.wto.org/english/docs_e/legal_e/17-tbt_e.htm. For further information on standardization and conformity assessment, see also ISO and UNIDO (2008, 2010), for example.

In addition, international trade flows (not least in agrifood products) have also become increasingly affected by *private* standards. Private standard schemes are voluntary standards developed and applied by non-public entities (primarily private companies and company consortia but also CSOs and NGOs). Typically, private standards are required by global brand producers and retailers when they source their products from suppliers, be they domestic or foreign firms. They are today a key mechanism for lead firms wishing to translate requirements – both product and process specifications – to other parts of the supply chain. They can also serve as mechanisms for safety and quality assurance and facilitate traceability, transparency of production processes, and standardization but also differentiation of products. In any case, providing a concise definition of 'private standards' is a complicated task given that there exists a multitude of norms, guidelines, codes and initiatives with different types of communication and verification mechanisms that are collectively considered as private standards. In fact, most private standards are not 'standards' in the strictest sense of the term. Still, one can distinguish between several types of private standards and roughly divide them into *buyer codes of conduct*, *certificates*, and *product labels*. Yet, even within these various types of standards, there are wide differences with regard to the application and governance required, their substantive focus, level of stringency, and auditing processes.

In recent years, their use has become more important and more widespread and they are covering a growing spectrum of issues, ranging from food safety and environmental sustainability to labor conditions and social sustainability. In many cases, such private standards include norms that go beyond national and local laws and even international (public) standards and/or contain further conditions. Often, such private standards are related to certification schemes which serve to signal compliance to consumers (see UNIDO 2010, FAO 2011). Given their private nature, compliance is not assessed by public entities and non-compliance does not entail sanctions by public authorities. Still, non-compliance can impede (or lead to disruptions of) international trade flows if global brand producers or retailers refuse to import and accept supply from producers that are unable to meet and/or get certified to the private standards they apply. This implies that although by definition private standards are voluntary, in practice they may become *de facto* mandatory wherever compliance is required for entry into certain markets.

The concept of "trade standards" used here comprises all these different types of standards described above. However, the different analyses undertaken in the various chapters of this report do not always refer to all the three types to the same extent. The first chapter of this report, for example, analyzes import rejections which are instances where non-compliance with mandatory public standards (i.e. technical regulations) gets sanctioned by public authorities in the importing country through the refusal of market entry for the shipment concerned. This chapter does not cover rejections due to non-compliance on phytosanitary requirements. The final chapter of this report, on the other hand, focuses more narrowly on private standards and their (potential) impact on international trade, particularly on agrifood exports from developing countries. Meanwhile, the chapters in between – one analyzing the role of standards in South-South trade and the other two presenting the findings of two surveys – make reference to the whole set of standards (from technical regulations and voluntary public standards to private standards), excluding those related to plant or animal health and their relevance for cross-border commercial transactions.

The multilateral trading system and trade -related standards

The recognition that standards shape, and indeed can restrict, international trade flows led WTO members to develop two specific agreements that is, the agreements on TBTs and SPS measures mentioned above (however, -in the case of the SPS Agreement- no decision was reached to date on whether it covers private standards). Over the past decades, and particularly under the leadership of the WTO since 1995, the global trading system has increasingly become codified and rule-based. Essentially, the WTO lays down legal ground rules and disciplines for international trade (in both goods and services) and for trade-related aspects of intellectual property rights. These rules are contained in multilateral trade agreements which basically constitute contracts that bind governments to operate their trade policies in accordance with what was agreed in multilateral negotiations.

The WTO Agreements on TBT and SPS measures have contributed to specify this rule-based global trading system. They provide an overall framework on technical regulations and standards and set disciplines on their application in a trade-related context. The TBT Agreement, for example, lays down how technical regulations, standards, and conformity assessment (e.g. sampling, inspection, testing and certification) procedures should be designed and used so that they do not constitute unnecessary obstacles to trade. It permits technical requirements that are established for legitimate purposes such as consumer or environmental protection but prohibits technical requirements created with the intention to limit international trade. With reference to the WTO's "national treatment" rule, the TBT Agreement also aims at banning discriminatory features from countries' technical regulations. Against this backdrop, WTO member states are recommended to adopt international standards (for example, those developed by the International Organization for Standardization, ISO) as their technical requirements where they exist and whenever possible. At the same time, the TBT agreement also encourages countries to recognize the results of other countries' conformity assessment procedures (for example, tests that determine whether or not a certain product is in compliance with a given standard).[2]

Meanwhile, the WTO SPS Agreement focuses more narrowly on the application of regulations relating to food safety as well as animal and plant health (phytosanitary measures) with respect to the spread of pests or diseases.[3] That is, the SPS Agreement covers all measures whose purpose is to protect (1) human or animal health from food-borne risks (arising, for example, from

2 See www.wto.org/english/docs_e/legal_e/17-tbt_e.htm.

3 That is, the TBT and SPS agreements have complementary scopes: The TBT Agreement covers all technical regulations, voluntary standards and conformity assessment procedures *except those* that are SPS measures and, thus, covered by the SPS Agreement.

additives, contaminants, toxins, or disease-causing organisms in foodstuffs), (2) human health from animal- or plant-carried diseases, and (3) animals and plants from pests, diseases or disease-causing organisms. By their very nature, such SPS measures may result in impediments to trade. For this reason, while the SPS Agreement permits governments to maintain appropriate sanitary and phytosanitary protection and accepts the fact that some trade restrictions may be necessary to ensure food safety and animal and plant health, it restricts the use of unjustified sanitary and phytosanitary measures for the purpose of trade protection. More precisely, in order to reduce possible arbitrariness of decisions, the Agreement requires any SPS measure to be based on scientific principles and assessment, to not unjustifiably discriminate among foreign sources of supply, and to be applied only to the extent necessary to protect human, animal or plant life or health and for no other purpose than that of ensuring food safety and animal and plant health. In this context, the SPS Agreement encourages governments to "harmonize" or base their national SPS measures on the international standards, guidelines and recommendations developed by three standard-setting bodies, including the joint FAO/WHO Codex Alimentarius Commission (for food safety), the World Organization for Animal Health (OIE), and the International Plant Protection Convention (IPPC). In summary, the aim of the SPS Agreement is to maintain the sovereign right of WTO members to provide the level of health protection it deems appropriate while ensuring that these sovereign rights are not misused for protectionist purposes and do not result in unnecessary barriers to international trade.[4]

While these international trade rules and disciplines, as enshrined in the WTO agreements, lay the foundation for equitable treatment for all, they require the capacity to both comply with and provide proof of compliance with the resulting trade-related standards. In its Trade Standards Compliance Reports, UNIDO is particularly interested in the study of challenges that developing countries face in complying with such trade standards, as well as in the analysis of root causes and consequences of non-compliance.

UNIDO's trade standards compliance analyses: Looking back and ahead

It is against the background of this increasingly rule-based global trading system that, since 2008, UNIDO has taken the initiative to collect evidence on a regular basis about trade-related challenges and their evolution over time, in particular in the area of compliance with (quality, certification, labeling, etc.) requirements set by international markets. With funding from the Norwegian Agency for Development Cooperation (NORAD) and in partnership with the Institute of Development Studies (IDS), UNIDO publishes since 2010 a periodical Trade Standards Compliance Report (TSCR) to systematically examine the challenges that developing countries face with regard to trade standards in the agrifood sector, and to support domestic policies and technical assistance to overcome them.

The starting point was the compilation and analysis of data on import rejections of agrifood products for two markets, the United States (US) and the European Union (EU), which were presented in the 2010 TSCR. Such import rejections give indications on the scale and root causes of compliance challenges of developing countries and allow to make estimations of the financial implications of non-compliance. Over time, UNIDO has been granted access to the data of two additional markets, Japan and Australia, which has made it possible for this second edition of the TSCR to present a comprehensive comparative analysis of import rejections of agrifood products for four major international export markets.

Against the picture of such trade standards compliance challenges, the TSCRs also assess the exporting countries' ability to detect and prevent non-compliance and the resulting export losses. For this purpose, UNIDO has developed and applied new innovative methodological tools. The 2010 TSCR introduced a Quality Infrastructure (QI) survey and the concept of a cost-benefit model for technical assistance. The present 2015 TSCR refines the QI survey tool and adds the findings from a corporate buyers' compliance confidence survey. Overall, this 2015 TSCR presents three measures of developing countries' trade standards compliance capacity that will be described in the following.

Assessing the trade standards compliance capacity of developing countries: An overview of measures

As described above, technical regulations and standards are increasingly prevalent in international trade, particularly of agrifood products, and continuously evolving (Henson and Humphrey 2009). Moreover, there is evidence that many developing countries (and exporters therein) face challenges in complying with the food safety and/or quality requirements that these regulations and standards lay down in a manner that maintains their competitiveness (World Bank 2005). In a bid to address these challenges, national governments and donors are making investments in compliance capacity in many developing countries, both within the public and private sectors. Such investments include 'hard' infrastructure (such as laboratories), the development and/or reform of institutional and administrative structures (for example national standards bodies and technical regulation frameworks), and the upgrading of production processes along agrifood value chains (for example the implementation of GAP and HACCP).

The challenge for national governments and donors is to allocate scarce financial and technical resources amongst a seemingly unending array of compliance capacity needs. In an effort to use such resources in an effective manner, there is a need to identify where the most acute compliance challenges are faced; in a trade context this means identification of the products and markets where the highest rates of non-compliance are recorded. A further and related challenge is appraising the status of the underlying compliance capacity across the public and private sectors, i.e. the ability to undertake the critical functions

4 See www.wto.org/english/tratop_e/sps_e/spsund_e.htm.

What are the priorities to strengthen compliance with trade standards?

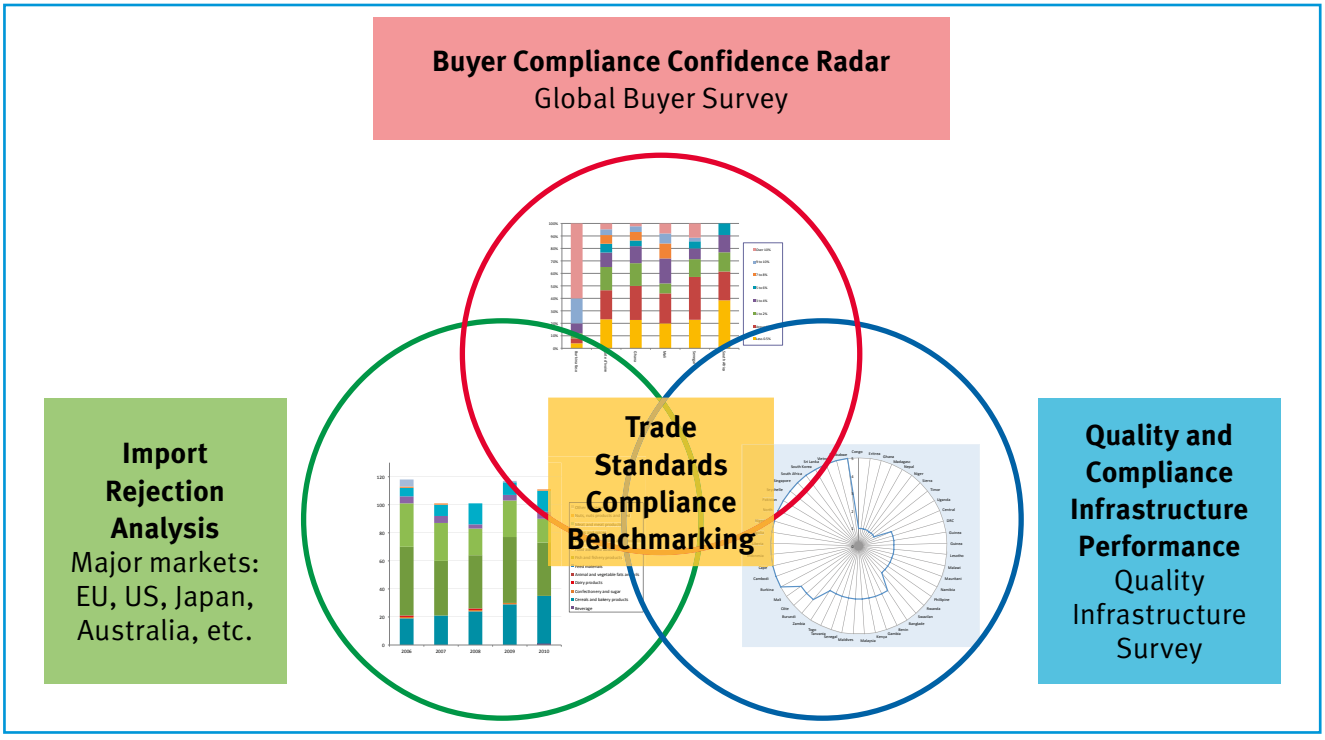
Developing countries face considerable demands to enhance their SPS capacity and strengthen compliance with trade standards, as a means to boost agri-food exports or meet other policy objectives. Since resources from national budgets and development partners are generally insufficient, priorities must be established. The STDF has developed a new decision-support tool – SPS Market Access Prioritization (SPS-MAP) – to help prioritize and make choices between competing SPS investments for market access, based on a multi criteria decision analysis approach. Effective use of the tool depends on the engagement of all relevant public and private sector stakeholders. Initial experiences have pointed to the value of this approach to, inter alia, encourage public-private dialogue, promote transparency, improve the economic efficiency of investment decisions and leverage funding. For more information, see: http://standardsfacility.org/sps-market-access-prioritization.

needed to achieve compliance in a manner that is recognized by the government and commercial customers in key export markets. The STDF has taken-up this challenge and developed a tool, the SPS MAP, which supports countries for such SPS-related decision-making.

Historically, efforts to appraise the trade-related compliance challenges faced by developing countries have typically focused on product and/or country-specific cases, often in the context of conspicuous incidents, such as regulatory reform or the imposition of new standards in export markets or the rejection of product consignments following official inspection. While such analyses have utility in highlighting specific compliance challenges, their failure to provide a systematic and comparative analysis across products and export markets and over time means that they are a relatively poor basis on which to allocate capacity-building resources. With this in mind, UNIDO set about defining a series of metrics that can facilitate a more comprehensive analysis of the trade-related compliance challenges faced by developing countries, with initial results reported in the 2010 TSCR (UNIDO 2011).

The starting point for UNIDO's work in this area was to utilize existing data, but to establish a more systematic manner in which these data might be analyzed such that the compliance performance of developing countries can be compared across products, exports markets and time. For some time, data on official rejections of agrifood product imports into the United States and the EU have been compiled, and indeed in recent years have been made publically available. The challenge with these data is to make sense of a very large volume of records of product consignment rejections such that the performance of developing countries *relative to one another* can be assessed on an ongoing basis. Thus, the TSCR 2010 proposed three summary measures of compliance capacity. The first measure is based on **import product rejection data** and applied these to records of official USD and EU rejections of agrifood products. These measures were shown to be robust and to reveal patterns in rejections across export markets and products and over time, such that they provide a credible indicator of compliance performance. Chapter 1 updates these prior estimates and extends them to further industrialized country markets, namely Australia and Japan.

Figure 1: *Three lenses on trade standards compliance capacity and challenges*



It is recognized, however, that official import rejection data provide only a partial account of the compliance challenges faced by developing countries. They only record instances of non-compliance with technical regulations that are enforced through inspection regimes in the respective export market. Further, rejections are only recorded when trade actually takes place; it could be that trade is partially or fully curtailed, for instance because export market buyers choose to source elsewhere. To address this gap in the analysis, a new **corporate buyers' compliance confidence survey** among companies in export markets has been implemented for the present 2015 TSC Report. The rationale behind this survey is that indicative information on the compliance performance of developing countries can be derived by consulting the corporate buyers of particular products from specific developing countries in order to complement the information already provided by the analysis of official import rejection data. For example, such buyers will routinely make judgements and/or have experience of the ability of particular countries (and exporters therein) to meet their food safety and quality requirements, which will in turn reflect the stipulations of technical regulations and the standards that they and/or their ultimate customers have adopted. Their perceptions of the compliance capacity of certain countries and the producers in the countries matter for their decisions where to source from. The corporate buyer survey aims to provide a systematic and consistent way in which to gather this information. The findings of a pilot application of the buyer survey are presented in Chapter 2.

Based on data collected through a QI survey, the 2010 TSCR presented a series of **Trade Standards Compliance Capacity Indexes (TSCCI)**, the aim of which is to assess the prevailing capacity of the quality infrastructure and a series of critical underlying compliance functions in developing countries. These include the ability to set technical regulations and standards, to undertake metrology, testing and inspection services, to accredit public and private providers of compliance services, etc. As with the analysis of import rejection data, the premise underlying the TSSCI is that the capacity of developing countries should be assessed relative to one another rather than against a strict benchmark, since it is the relative capacity and performance of countries that determines their trade competitiveness. Thus, capacity indices are derived for each of these compliance functions. The application of the TSSCI concept in the 2010 TSCR highlighted the challenges with gathering a sufficiently comprehensive and rigorous set of data to permit defensible measures to be derived. Thus, the structure of the indices has since been rethought and an improved data collection instrument designed and applied. Results for a much larger set of countries are presented in Chapter 3.

In summary, these three strands of analysis allow to look at the trade standards compliance capacity and challenges of developing countries from three different angles or through three different lenses which are complementary and provide a fairly holistic picture (see also Figure 1), as follows:

1. The **import rejection data** provide the importing markets' (public) regulator's perspective.

2. The **corporate buyers' compliance confidence survey** looks at developing countries' compliance capacity from the perspective of the importing private company.

3. The **Quality Infrastructure (QI) survey** provides the perspective of the exporting countries' (mainly public but also private) QI and conformity assessment institutions.

These three distinct measures of trade standards compliance capacity aim to pull together a relatively comprehensive and consistent picture of the performance of particular developing countries in complying with technical regulations and standards in international agrifood markets. Together, they help to identify weaknesses in a country's compliance capacity that it needs to address to fully exploit its export potential. They can also serve an important benchmarking function as they enable us to see where a given country's capacity to undertake the critical functions underlying compliance is strongest and weakest relative to other countries in the same region or at a comparable level of economic development. They also reveal the exports markets and products where the greatest challenges are faced in complying with both official food safety and quality regulations and also the requirements of corporate buyers in the importing market. Overall, the results from these three strands of analysis provide useful indications of where development efforts and technical assistance are most beneficial.

Of course, all of these measures remain 'work in progress'; they will need further refinement and adjustment in the light of experiences with data collection and analysis. Efforts also need to be made moving forward towards pulling the results from these distinct analyses together in the form of specific country case studies, which is seen as a priority for the next TSCR.

Key findings

This report presents a wealth of innovative and detailed analyses but the key findings can be summarized as follows.

Chapter 1 updates the analysis of EU and US agrifood import rejections presented in the 2010 TSCR and expands it by including data from two additional international export markets, namely Australia and Japan. This in-depth analysis is undertaken for the agrifood sector in aggregate as well as for important agrifood product sub-groups such as fruit and vegetables or fish and fishery products. A number of different indicators (e.g. unit rejection rates and relative rejection rates) are presented to facilitate interpretation of the data and to allow comparisons across export markets and the benchmarking of individual countries' performance against that of their peer group. The chapter also aims to quantify the financial implications of import rejections and provides estimates of "export losses" incurred by developing countries due to the rejection of agrifood product shipments by the authorities in export markets.

The patterns and trends in rejections of developing country exports point to the countries, products and value chains that are most affected by compliance challenges and also give an indication of the main reasons and the scale of missed trade opportunities in the Australian, EU, Japanese and US markets (and how this changes over time). One finding is that a relatively small number of countries – among them many Middle-Income Countries (MICs) – account for the bulk of import rejections of agrifood products. In fact, across all four markets that are ana-

lyzed, the rankings of the countries with the highest number of rejections are dominated by MICs.

Moreover, it is observed that some countries have high rejection rates in all markets for all or most of the commodities they export, suggesting systemic deficiencies and the need to strengthen their overall compliance capacities or quality infrastructure (QI). Examples include Bangladesh, China, the Dominican Republic, Egypt, Ghana, India, Lebanon, Nigeria, Pakistan and Sri Lanka. Other countries face substantial import rejections in particular markets, possibly indicating challenges to comply with specific technical regulations in specific export markets. This is true, for instance, for El Salvador and Senegal in the US market, for Thailand and Turkey in the EU market, for the Fijis in the Australian market, and for Peru in the Japanese market. Another example is Colombia which, in general, is a good performer but its nuts and seed exports suffer from relatively high rejection rates in the US market. Still other countries have high rejection rates for particular commodities or product groups only, suggesting that a critical examination of specific value chains and/or the introduction of specific food safety controls is needed to avoid future rejections. Examples include fishery exports from Indonesia and the Philippines, fruit and vegetable exports from Hong Kong (China), nuts and seed exports from Iran (particularly to the EU), and fruit and vegetable as well as fishery exports from Viet Nam. In summary, these analyses allow to identify whether compliance challenges are commodity-specific, export market-specific or rather systemic. Finally, the data also reveal the reasons for import rejections, thereby pointing developing country policy makers to the priorities in QI development and upgrading that will facilitate access to markets and integration into global value chains.

Import rejections imply foregone revenues for the supplier of the shipment. Over the period 2002 to 2010, the "export losses" associated with US rejections of agrifood exports across four important sub-sectors analyzed by UNIDO (i.e. fisheries, fruit and vegetables, herbs and spices, and nuts and edible seeds) are estimated to amount to US$715 million, averaging almost US$80 million per year. The corresponding financial losses are estimated to average US$77 million per year for EU import rejections, US$14 million per year for Japanese rejections, and US$7 million a year for Australian rejections. At sub-sectoral level, "export losses" associated with non-compliance in the fishery sector are estimated to amount to almost US$80 million per year across all four markets, while accumulated Australian, EU, US, and Japanese import rejections in the fruit and vegetables sector average about US$35 million per year.

The broad message from these results is that the economic losses associated with import rejections are fairly small, and indeed often not very significant as a proportion of the value of trade. At the same time, particular instances of appreciable losses are observed, either where significant and persistent compliance problems occur (for example with nuts and seed exports from Iran to the EU) and/or where compliance problems are faced by small or medium-scale exporters and sizeable consignments are rejected (for example with exports of herbs and spices from Papua New Guinea to Australia). However, the more common scenario is where even persistent compliance problems resulting in multiple rejections and even quite sizeable losses in absolute terms are "drowned out" by the sheer size of trade (this is the case, for example, with fruit and vegetable exports from Turkey to the EU).

In interpreting these estimates of "export losses", it is, however, important to recognize that they only represent the "tip of the iceberg" in terms of the economic costs associated with the problems faced by developing countries in complying with food safety and other requirements in export markets. What is far more significant is the fact that non-compliance can hurt the reputation of the exporting country as a supplier of agrifood products or specific commodities or even curtail exports altogether, either because market access is restricted (e.g. by import bans) or because exporters are perturbed by the risks of facing a rejection. Import rejections, thus, do not only have an immediate impact in the form of interrupted trade flows and foregone export revenues but might also harm the country's reputation as an exporter of a certain commodity or product group – which is an intangible asset of increasing importance in a world of intensifying global competition and ever higher standards.

Chapter 2 presents the findings from the implementation of a "corporate buyers' compliance confidence survey" among companies importing fresh fruit and vegetables and fishery products from West African countries. This provides another perspective and adds another layer of analysis of the trade standards compliance challenges and capacities of developing countries. The analysis of agrifood product import rejections presented in chapter 1 provides only a partial picture. Official import rejections are the result of actions by public authorities based on judgements about compliance with official regulations. However, importing companies also have requirements with respect to food quality and safety which exporters of food also need to satisfy.

The key objective of this corporate buyers' compliance confidence survey ("buyer survey") is to capture the perspective and perceptions of importing/buying companies and to get insights into their sourcing decisions and their buying experience. The survey serves to identify those factors that are most important for buyers/importers when they make choices about which countries to source their supply from.

Among the most important factors are those that relate to supply chain performance, particularly issues relating to safety, quality, traceability and consistency of supply. The strength of the food safety compliance infrastructure is ranked highly among the factors that determine not only the choice of country, but also how suppliers succeed in retaining their position within the buyers' supply chains. Poor performance will lead to fewer buyers choosing to source from a particular country, and an increased likelihood that the buying relationship will be terminated in a given period.

A related purpose of the survey is to get buying companies' assessment of the compliance capacity of a number of selected developing countries from which they source or had sourced food products. The survey was piloted in the ECOWAS region with South Africa included as a benchmark country. Respond-

ents, i.e. companies in key industrialized country markets, were asked to assess various dimensions of the compliance capacity of the sample countries and to rate their confidence in the quality infrastructure and related (e.g. testing) services that exist on the ground. The rationale behind this approach is that buyers who have actually imported from a particular country will have direct experience of that country's compliance performance and compliance infrastructure and will, thus, be in a position to make informed judgements about that country's compliance capacity.

The results show clear differences in the capabilities of different countries within the ECOWAS region and also a substantial gap between the capabilities of even the best performers in this region compared to South Africa. The survey also asked about the degree of confidence of respondents in the local laboratory testing infrastructure. One important finding was that foreign buyers were often willing to accept testing results from local laboratories, but only if these laboratories were internationally accredited. However, irrespective of the degree of acceptance of local laboratory testing results, the vast majority of respondents additionally undertook their own product tests, and a large percentage of these tests took place in laboratories in the buyers' home countries. Complementing these tests, buying companies also conducted their own visits to check on local food safety and quality controls, although the extent to which this happens varies between countries and across product groups.

The countries that are rated less favorably have a long way to catch up. Nevertheless, even these countries have export opportunities. The results of the survey show that the hierarchy of priorities determining the sourcing decisions of buying companies varies between different types of buyers. Certain destination markets have different types of buyers, with large supermarket chains commanding larger market shares for fresh produce and fish in Northern Europe than in Southern or Eastern Europe, for example. These supermarket chains in Northern Europe are particularly associated with stringent demands concerning the quality of the food products they purchase. Only those importing companies that source from the countries with the best and most-trusted compliance infrastructure are able to supply such more demanding consumers that require additional assurances about the quality and safety of produce. Conversely, buyers sourcing from countries whose compliance infrastructure is perceived as being less reliable are much more likely to be supplying other types of customer with less strict food safety and quality requirements (e.g. food manufacturers or wholesalers).

Countries wishing to expand their export markets clearly need to improve the quality of their compliance infrastructure and strengthen the confidence of buyers in local capacities. However, it is less clear what steps need to be taken in this direction. The corporate buyers indicate a range of factors that determine country choice. The most important ones—quality, consistency of supply, traceability and food safety controls in the supply chain—may be determined by enterprise-level competences rather than the broader, public and private compliance infrastructure. In other words, meeting the requirements of buyers requires public-private collaboration and the development of business competences as much as it needs investment in the public compliance infrastructure. Another conclusion from the findings above is that export development strategies need to match country-level capabilities (or even enterprise-level capabilities) with the differing demands from different markets, products and types of buyers.

It is important to recognize, however, that these results come from the first pilot application of the buyer survey instrument which is still "work in progress". Thus, while the survey produced informative results that serve to demonstrate the compliance capacity of countries in the ECOWAS region, most notably relative to South Africa as key regional comparator, they should be regarded as preliminary.

Chapter 3 looks at developing countries' capacity to comply with trade standards from yet another angle. Based on countries' self assessments elicited through a "Quality Infrastructure Survey", it reports Trade Standards Compliance Capacity Indices (TSCCI) for a total of 49 countries in Africa and Asia. The focus of the TSCCI is on the ability of countries to perform the key functions needed for compliance with technical regulations and standards in trade more generally. Taking established approaches to asset indices as starting point and building on pilot work undertaken for the 2010 TSCR, the TSCCI provide a systematic framework in which to assess capacity across ten areas, including quality policy, technical regulation, standards-setting, metrology, testing, inspection, certification, accreditation, food safety, and WTO-related institutions.

There is ample evidence that trade standards-related infrastructural capacity and compliance services are weak in many developing countries and that such deficiencies not only undermine efforts to establish and/or expand agrifood exports but also endanger effective local consumer protection. The scale of these weaknesses, which can extend across multiple dimensions of compliance capacity, makes apparent the importance of identifying priorities for capacity-building programmes and also of assessing the impacts of previous capacity-building investments. This suggests the need for a systemic approach to quantifying levels of trade standards compliance capacity and this is where the TSCCI come into play.

The TSCCI serve as an innovative analytical tool to assess and measure the capacity of a country's quality infrastructure and related services with a specific focus on their relevance for the country's participation in international trade. A critical characteristic of the TSCCI is that they aim to provide measures of *relative* capacity to perform the key functions underlying trade standards compliance. In other words, reflecting the nature of the indices, the results presented in chapter 3 give indications of the status of capacity across ten compliance functions for countries *relative to one another* rather than a fixed benchmark. The rationale behind this is that the trade competitiveness of a particular country is reflective of how its trade standards compliance capacity compares to its key competitors.

To enable comparisons across countries or groups of countries, the countries analyzed here are grouped into quintiles for each of the ten compliance functions with countries in quintile 1 having the lowest *relative* capacity and countries in quintile 5 hav-

ing the highest *relative* capacity in the respective compliance area. Levels of capacity can be compared for any one country across these areas and for any one dimension across multiple countries. It is particularly instructive to examine the capacity of a developing country relative to other countries at a similar level of development and/or in the same region. The TSCCI, thus, offer unique benchmarking opportunities to developing country policy makers, donors and international organizations alike.

In so doing, the aim is to highlight specific areas of strength and weakness in a country's trade standards compliance capacity. The results from the survey show that some countries have relatively strong capacity in all or almost all of the ten areas analyzed here. Examples include Indonesia, Malaysia, the Republic of Korea, Singapore, South Africa and Sri Lanka. By contrast, other countries are found to have low values for all or most TSCCI, reflecting weak relative capacity throughout. This is true, for instance, for the Central African Republic, the Democratic Republic of the Congo, Guinea-Bissau, Lesotho, Maldives, and Timor-Leste. Finally, there are also countries that have only some specific areas of weakness. For example, while Viet Nam is placed in the fifth quintile for most areas (reflecting relatively strong capacity), its standardization capacity is only in the second quintile, and its testing and inspection capacity in quintile 3. Similarly, Tanzania is found to have high or at least medium TSCCI values for most areas but relatively weak capacity in terms of quality policy/legislative environment. Burkina Faso, in turn, is an example of a country with a few strengths (quality policy/legislative environment, testing capacity, food safety) amid a generally weak compliance capacity.

The set of indices can help to undertake a capacity gap analysis that can also facilitate the identification of the main underlying reasons for import rejections, for example. The TSCCI aim to facilitate informed policy choices and, in particular, can be useful in identifying where domestic quality infrastructure development efforts and/or international technical assistance might be best targeted. In turn, the impacts of domestic capacity building and/or technical assistance can be assessed and monitored using the TSCCI; the enhancement in capacity with respect to a particular function should be reflected in an increase in the value of the respective index. Overall increases in the TSCCI indices might also result in improvements in the country's trade competitiveness and should be reflected in a reduction in its import rejection rates.

While the methodology has been improved since its initial conceptualization in the TSCR 2010, it is important to emphasize that the TSCCI very much remains "works in progress". In future issues of the TSCR, this approach and analysis will be further developed and strengthened. The aim is to refine the TSCCI and collect more comprehensive and reliable data so that results can be reported for an even larger number of countries.

Chapter 4 takes account of the recent trend of intensifying commercial linkages between developing countries and examines the relevance of standards in such South-South trade in agri-food products. The impact of public regulations—and, more recently, private standards—on South–North trade has long been discussed. Meanwhile, South–South trade in food has expanded rapidly in recent decades along with South–South trade in general, and this has led to increasing attention being focused on the role that public and private standards play in shaping such trade. This chapter addresses this issue, first, through a more conceptual analysis and, second, through three case studies from Africa, Asia, and Latin America.

SPS measures are often cited (justifiably or unjustifiably) as substantial barriers to trade for exporters from developing countries. Moreover, it is frequently argued that SPS measures are more stringent for South–North trade and that they are less of an issue for South–South trade, mainly for two reasons. First, the challenge for exporters is not so much the existence of SPS measures per se, but rather the gap between practices in domestic markets and those required for export markets—the bigger the gap, the greater the cost of turning toward export markets. It might be surmised that the differences in regulations are greater between developed and developing countries than among developing countries. Second, recent years have seen a significant growth of private standards in Northern food markets which is partly driven by the increasing stringency of public regulations. These standards respond to consumer preferences with regard to both food safety and concerns about other issues such as social and environmental impacts. Such concerns may be less widespread among consumers in developing country markets. In addition, consumers in Southern markets are likely to be more price conscious than Northern consumers. This is why it is frequently claimed that the barriers posed by private standards are not as strong in Southern countries as in some Northern countries.

These considerations suggest four reasons for the gap between domestic SPS requirements and those in export markets being smaller in South–South trade than in South–North trade. First, if the increased stringency of regulations affecting South–North trade derives from domestic considerations in developed countries and rising consumer concerns about food and health in these countries, trade between Southern economies might be less subject to such controls because consumer awareness about food safety and domestic food safety systems are, in general, less developed. Second, one of the criticisms of food safety controls in Northern markets is that they are not appropriate for agricultural conditions or production systems in developing countries. To the extent that agricultural conditions or production systems are more similar between developing countries, then import requirements in Southern countries should be more appropriate to exporters from the South. Third, the capacity of Southern countries to enforce regulations through border inspections may be more limited than for Northern countries, even when the regulations themselves may be equally strict. Fourth, processes of South–South regional integration should lead to harmonization of standards and, therefore, reduce their role as barriers to trade.

However, there are important counter-arguments and counter-evidence. First, there are increasing concerns expressed by consumers in developing countries about food safety, not least because of highly publicized food scandals and cases of evident

damage to human health. More generally, food retailers catering to more affluent consumers in the rapidly growing economies of the South are following the same trend toward emphasizing food safety as one of the factors for attracting consumers. Further, as the gaps in levels of income and food safety capacities widen among developing countries, barriers to trade may increase. For example, developed country controls on levels of aflatoxins in maize and nuts have long been criticized, but, as one of the case studies shows, South Africa's regulations on maximum levels of aflatoxins are stricter than in many Northern markets. These controls greatly restrict the potential for Mozambique to export nuts to South Africa as the former country does not have the capacity to control aflatoxin levels in nuts.

Second, as for developed countries, for developing countries that import food not only human health issues but also plant and animal health issues are important. Many of these importing countries have large agriculture sectors and are themselves substantial food exporters, so they will be concerned about the risks posed by food imports to plant and animal health. They will, therefore, take similar steps as Northern countries to control these risks and safeguard animal and plant health, not only to maintain the integrity and competitiveness of their domestic industries, but also to ensure that they are able to export food products to other countries. For example, as one of the case studies elaborates, exports of papaya and pineapples from Malaysia to China are made possible by agreements that specify acceptable treatments of fruit to eliminate disease, backed up by inspections and audits. The pre-export treatments and supervisory mechanisms are very similar to those required by some developed countries that have domestic industries to safeguard.

Third, exporters to Southern economies also face problems arising from non-compliance (on the part of the importing country) with SPS principles such as non-discrimination between imported and domestic produce and producers, transparency of rules and regulations, proportionality and equivalence (as laid out in the SPS Agreement, for example). The case studies on Africa, Asia and Latin America presented in this chapter all point to problems for exporters caused by such defiance of SPS principles.

Some of these issues could be mitigated through regional integration initiatives. Greater harmonization of standards and controls has certainly been the objective of such initiatives, but national interests often slow down the development of common standards so that progress has been limited. Studies show that there is often a substantial gap between agreements in principle to harmonize SPS standards and actual implementation.

Overall, thus, it would be wrong to attribute the fact that South–South food trade is growing more rapidly than South–North trade primarily to a more favorable standards and compliance environment. Many of the challenges that exporters from the South face when they target Northern export markets also arise when they target Southern markets. Southern economies have every reason to develop and maintain stringent controls with respect to food safety and plant and animal health. Furthermore, as incomes rise in the most rapidly expanding Southern markets, consumers will become more discriminating and demand safer food. Finally, regional integration initiatives should facilitate the growth of intra-regional trade in food, but the economies of sub-Saharan Africa in particular will not benefit fully from opportunities within the region unless they can improve not only their SPS compliance capacity but also their overall competitiveness against exporting countries in Asia and Latin America that have been investing heavily in agricultural systems and increasing both value-added and overall competitiveness.

Chapter 5 fulfills one of the functions of the TSCR series, namely to map the changing landscape of trade-related standards and to highlight compliance issues for developing countries that come with new developments. The purpose of this chapter on "Emerging Issues" is to provide key stakeholders in the field with a platform to outline their views on emerging priorities related to trade standards compliance. The idea is to collect different thoughts and opinions on one particular topic—which in this TSCR is "the emerging landscape of private standards and related certification in the agrifood sector".

To capture a diversity of perspectives, UNIDO invited a variety of stakeholders in the field—including lead firms in the agrifood industry, business-driven platforms, producer associations based in developing countries, certifying and labeling organizations as well as NPOs and NGOs—to lay out their views on how they think private standards and related certification will evolve in the future. All contributors were asked to present reflections on the changing landscape of private standards and what opportunities and challenges this will bring to different stakeholders, while putting a certain focus on the impacts on producers in developing countries who want to sell their goods in international markets.

There is widespread consensus in the expectation that the importance of private standards and related certification will further grow in the years to come. For one, with food production and distribution being increasingly organized within global supply chains that cut across multiple regulatory jurisdictions around the globe, private standards are used to facilitate the coordination of food chains across multiple locations, producers and companies. Moreover, consumers around the world are becoming more and more demanding with regard to product quality and safety but also the sustainability of production and this trend will continue in the coming years for various reasons. First, consumers' interest in and knowledge about food production is increasing and their awareness for quality and safety issues rising. Second, consumers now consider an increasing number of facets of a product beyond price. Ecological considerations (such as protecting the environment and diminishing ecological footprints) have gained importance as have concerns about the social aspects of production (including the observance of labor rights and improvement of working conditions in global supply chains). Private standards and certification are expected to play an increasing role in responding to these consumer demands. Finally, armed with the power of choice, consumers will increasingly not only be trying to "do no harm" but will actually use their purchasing power to "do some good".

At the same time, as many of the contributors to this chapter note, there has been a proliferation of private standards and certification schemes. This proliferation has also led to duplication and caused a certain amount of confusion among consumers, producers and retailers over what each standard stands for. Many stakeholders, therefore, maintain that there is a need for a harmonization or at least streamlining and benchmarking process across different schemes and their underlying requirements and conformity assessment procedures (examples of benchmarking initiatives are included in Chapter 5). Complying with and proving compliance with a multitude of schemes is costly for suppliers due to expenditures relating to conformity assessment, auditing, and certification procedures. While there are some initiatives in this direction that have been launched, these costs could be brought down through further convergence, harmonization or streamlining between different systems. Moreover, in a world of multiple standards and certification schemes, credibility is crucial. This growing need for some assurance about the credibility of standards, labels and certification schemes leads to stakeholders becoming more demanding of how certification programmes demonstrate independence, impartiality and consistency with international guidelines. Third-party standards and external evaluations of certification programmes by independent organizations are, therefore, becoming ever more important.

With the number of schemes increasing, the need to prove impact is also becoming more pressing. The ability to demonstrate social, ecological and economic impact is, in fact, vital to ensuring continued stakeholder engagement and support for certification in the future. Responsible companies and certification scheme owners will not only need to measure the positive impacts they are creating but also communicate this information in a clear and transparent way to the public. This will require the development and strengthening of monitoring and evaluation mechanisms that allow for comprehensive collection and analysis of data on certification and its impact.

There is, however, the need to balance the requirement of best practices and cost and complexity implications. On the one hand, standards must respond to new knowledge in order to ensure that they integrate global best practices for the continued quality and robustness of certification processes and performance requirements. On the other hand, potential cost and complexity implications need to be borne in mind as this is an area of constant concern for stakeholders.

Another emerging trend highlighted by the contributors to this chapter is the increasing importance of private standards and growing demand for certified products in Southern countries, driven among other factors, by population growth and expanding middle classes. Demand grows, in particular, for (certified) safe food but there is also a growing interest by companies and retailers in emerging economies in sustainably produced food. This will, in principle, provide incentives for certification of a more diverse product range. However, the further uptake of private standards in emerging markets will depend on both their relevance and accessibility to the key players in these markets.

For producers in developing countries, the use of private standards can bring benefits, as is pointed out unequivocally by the contributors to this chapter. In fact, various studies have demonstrated that farmers complying with the requirements of private standards and obtaining related certification may expect to reap benefits such as improvements in productivity, yield, income and food security. Private standards can also help them, and smallholders in particular, to develop a better understanding of the notions of food safety, food quality, and traceability. In some cases, producers are rewarded with a price premium and more stable prices as well as longer-term contracts and business relationships, reducing risks and volatility of income. In addition, the future will bring new business opportunities as the market for certified products is expanding beyond the more traditional "early adopters" markets in advanced economies into new markets in the global South. This will likely also translate into demand for a more diverse range of certified products for which developing countries often have excellent endowments and growing conditions. These results and prospects are encouraging but studies also show some variation across impact indicators, certification schemes and regions.

Yet, the increasing importance of private standards will also bring challenges to exporters in developing countries. First, there is often limited awareness, knowledge and understanding of private standards, certification schemes and their requirements among producers, particularly smallholders. And even where knowledge exists, small size and lack of access to expertise as well as technical and financial resources are among the key challenges hampering implementation. Most importantly, implementing private standards and obtaining certification is often seen as costly and cumbersome, especially by small producers. The multiplication and proliferation of similar but non-equivalent schemes adds to the burden of producers that need to prepare for several audits and reporting schemes, each often entailing different administrative requirements. These costs eat into producers' profits as in most cases costs are not shared between buyers and suppliers nor are they compensated for (in terms of higher prices, for example).

Meanwhile, lead firms and especially retailers that adopt private standards and that sell an ever growing range of certified products are expected to benefit from increased consumer loyalty and trust, particularly the early movers. Firms that expand their use of sustainability standards will appear as "responsible companies" towards authorities, consumers and civil society and improve their reputation. Shifting to certified products can support companies in building brands and generating sales growth. Moreover, transforming their supply chains to be more sustainable will help companies to maintain privileged access to resources and to secure their future supply within a context of increased competition from emerging economies. However, the contributors to this chapter highlight also challenges for lead firms. They expect that the biggest struggle of lead firms in future years will be the availability of certified products. In the context of growing demand, it will become increasingly difficult for them to identify enough capable producers and secure sufficient and reliable supply. At the same time, companies run the

risk of their key suppliers moving to less demanding buyers if compliance demands are not met with a commitment to a process of cooperation. With the proliferation of private standards, labels and certification schemes, ensuring credibility and demonstrating impact will have to receive increased attention from lead firms and will make them more dependent on sufficient auditing competence being available.

In the context of increased interest in sustainability, the role of standard-setting and certification/labeling organizations is expected to grow in the future—at least as long as they can deliver against their promises and perceived benefits. The more private standards and certification schemes exist, the more will stakeholders insist upon independent third-party verification. Certification and labeling organizations as well as NGOs are key in setting the gold standard and in ensuring that fairness and sustainability concepts, as well as the process to achieve them, are well defined and not diluted by vested interests. At the same time, rolling out standards for an ever wider variety of producer setups is not always a straightforward task. Certification organizations, thus, will have to strengthen their efforts to review rules and procedures and to reform assessment and certification processes in order to balance the requirement of best practices and holding down costs and complexity. Identification of opportunities for efficiency gains and cost reduction will become a constant imperative for scheme owners to remain viable and to provide incentives for the acceptance and uptake of their standards. Moreover, they will have to enhance their efforts to provide expert advice, guidance, training and assistance to producers to enable them to reach certification, particularly in developing countries.

NGOs are seen to play a range of roles in this changing landscape of private standards and related certification. They can lead effective campaigns and advocacy founded on good quality research to promote understanding of social and environmental issues. They can also facilitate impact assessment and communicate case studies which give credit where it is due and have a demonstration effect. Some of the contributors to this chapter of the TSCR anticipate that, thanks to their independence, the role of NGOs will expand further both in the development of standards and in checking claims about the impacts attributed to the implementation of other, e.g. retailer standards. Companies will increasingly seek collaboration with NGOs to ensure that standards are credible and effective in driving positive economic, social and environmental change.

Finally, the stakeholders contributing to this chapter were also asked to present their views on the part that they think international development agencies will play in this scenario of emerging private standards. Many of them emphasized the potential role of international organizations as convening partners, in particular to initiate public-private projects and partnerships that ensure an equitable distribution of the benefits from private sustainability or food safety standards among international buyers and suppliers in developing countries. Development agencies are also seen to be of increasing importance to raise awareness about quality issues and private standards and to provide technical assistance and training, particularly to smallholders, to contribute to the strengthening of generic local capacities which facilitate compliance. This can include support in the area of information management and assistance on traceability and recording requirements. In addition, international agencies are expected to play an increasing role in driving and administering, as independent brokers, benchmarking processes across different certification schemes.

Overall, there is agreement that the transition to more responsible and sustainable production and consumption through private standards and certification schemes requires the engagement of many stakeholders, including all supply chain actors. The role of consumers as ultimate “watch dogs” will also grow as private standards and labels offer them a powerful way to make a positive choice in favor of certified and more responsible products and to instigate change through their everyday shopping. Promoting sustainability through standards is, thus, a call for multi-stakeholder efforts.

1 Import Rejection Analysis as a 1st Measure of Trade Standards Compliance Capacity

1.1. Introduction

The Trade Standards Compliance Report 2010 (UNIDO 2011) presented an analysis of European Union (EU) and United States (US) rejection data for imports of agrifood products over the period 2002 to 2010. While it is recognized that these data capture just a small proportion of the agrifood imports impacted by food safety and certain other technical requirements in these markets, they do reveal broad patterns and trends in compliance problems over time, across agrifood products and between export markets. Thus, countries that exhibit significant compliance problems, and the extent to which these problems are commodity-specific and/or export market-specific, can be identified. It is also possible to assess whether the compliance problems faced by a particular country are shared by its major competitors and/or persist over time rather than being short-term "crises".

Here, the analysis of agrifood product rejection data presented in the previous issue of the Trade Standards Compliance Report is updated and extended as follows:

- The analysis of patterns and trends in EU and US rejections are extended to cover the period 2002 to 2010
- New data are analysed for Japan over the period 2006 to 2010 and for Australia over the period 2003 to 2010.

Thus, this report presents results for four key industrialized country markets. Using a common set of metrics (see below), the aim is to permit comparison of trends and patterns of rejections across these markets. It is important to recognize, however, that the product coverage of these data differs between markets, and that they result from distinct regulatory regimes and distinct systems of conformity assessment and data recording, as described in Boxes 1.1 to 1.4.[5] For this reason, any differences in rejections across these four export markets should be interpreted with care. In addition, the underlying regulatory regimes are subject to reforms and can change over time, resulting in changing compliance requirements in the course of time (see Box 1.5 on the US Food Safety Modernization Act).

5 See Henson and Olale (2011) for a discussion of the EU and US data. Also see the Rapid Alert System for Food and Feed (RASFF) (http://ec.europa.eu/food/food/rapidalert) and the Operational and Administrative System for Import Support (OASIS) (www.fda.gov/ForIndustry/ImportProgram/ImportRefusals) websites for further information on the EU and US rejection data, respectively. For further information on the Japanese and Australian rejection data see www.mhlw.go.jp/english/topics/importedfoods/index.html and www.daff.gov.au/biosecurity/import/food/failing-food-reports, respectively.

Box 1.1. *European Union's Rapid Alert System for Food and Feed*

The EU's Rapid Alert System for Food and Feed (RASFF) provides a platform for the exchange of information between member states on measures taken in response to food and feed products that pose an immediate risk to human health, both in the EU internal market and with respect to imports from Third Countries.[1] All EU Member States plus Iceland, Liechtenstein and Norway are members of the RASFF. Under Regulation (EC) No. 178/2002, members are required to make a notification through RASFF of:

- Immediate measures aimed at preventing products being placed on the market, forcing the withdrawal of products from the market or the recall of products to protect human health
- Recommendations or agreements with suppliers of products, whether voluntary or obligatory, laying down conditions on the placing on the market or the use of products that pose a serious risk to human health
- Border rejections of product consignments that pose a direct or indirect risk to human health.

The first two of these scenarios relate to so-called "market notifications"; products on the EU's internal market that are found to pose an immediate risk to human health. The third scenario relates to products that are the subject of a border rejection and never enter the EU, but rather are sent back to the country of origin, destroyed or diverted to another destination.

In the analysis below, the major focus is on border rejections since this is the main mechanism through which controls are exerted on imports of food and feed products from Third Countries. However, included in the data are a relatively small number of market notifications. Thus, reference is made throughout to "import rejections".

Box 1.2. *United States Operational and Administrative System for Import Support*

The US Food and Drug Administration (FDA) is responsible for controls on imports of pharmaceuticals, medical devices, cosmetics and food products. Data on border rejections are available through the Operational and Administrative System for Import Support (OASIS), an automated FDA system for processing and making admissibility determinations for shipments of imported products that come under the jurisdiction of the FDA. Prior to 1998, records were kept of all import consignments subject to rejection regardless of whether these were eventually permitted to enter the United States. Since that time, only consignments actually refused entry have been recorded, making the data more directly comparable to those of RASFF.

The basis on which imports are regulated is the Federal Food, Drug and Cosmetic (FD&C) Act that lays down requirements not only for product safety but also labelling and quality, at least as it relates to adulteration. That is, unlike the EU's RASFF which collects data on import rejections that are related almost entirely to non-compliance with food safety requirements, the US OASIS data also includes rejections caused by non-compliance with a broad set of compositional and labelling requirements, among others. Please also note that regulation of meat and poultry and meat and poultry product imports is the responsibility of the Food Safety Inspection Service (FSIS) of the US Department of Agriculture (USDA). Thus, these products are excluded from the OASIS data while they are included in the data sets of the other three export markets analysed here.

Box 1.3. *Japanese system of food import control*

To ensure the safety of imported foods and related products, Article 27 of the Japanese Food Sanitation Law (Act No. 233 of 1947) obliges importers to submit an import notification to a Ministry of Health, Labor and Welfare (MHLW) Quarantine Station prior to importation. At the quarantine station, inspectors carry out document examinations and inspections to check whether food products for import comply with the Food Sanitation Law.[2] These inspections also involve the regular testing of imported food products. In fact, the MHLW carries out different types of inspection. It conducts *regular* inspections and testing, the frequency of which is based on guidelines laid down in the Food Safety Basic Act. The MHLW also carries out *enhanced* inspections and testing (which are more frequent and extensive) when violations have been identified and until a period of compliance has been (re)achieved. Furthermore, *additional* inspections can be authorized when recurring instances of non-compliance are recorded.

Consignments that do not pass the inspection because they are judged not to comply with the Food Sanitation Law cannot be imported into Japan, and are therefore rejected. The data employed for the analysis here provide details of all violations that result in a product consignment being refused entry into the Japanese market.

Box 1.4. *Australian Imported Food Inspection Scheme*

The Department of Agriculture, Fisheries and Forestry (DAFF) is charged with administering and enforcing controls on food imports into Australia. Food imported into Australia must meet the food safety standards that are laid out in the Australia New Zealand Food Standards Code. The Imported Food Control Act 1992 provides for the monitoring, inspection and control of imported food using a risk-based border inspection programme, the DAFF Imported Food Inspection Scheme (IFIS). Under the IFIS, food is subjected to visual inspection and label assessment by authorized DAFF officers but it may also be subjected to analytical testing for particular hazards to ensure compliance with the Food Standards Code. Food imported into Australia is classified into two inspection categories: (1) risk, and (2) surveillance. These categories determine the frequency of testing and the tests that will be applied.

Imported food that through DAFF inspections has been found to fail analytical testing or to not meet the compositional requirements of the Food Standards Code is considered "failing food" and not allowed into the country. DAFF publishes monthly Failing Food reports which present data compiled from the results of inspection activity on imported food consignments under the IFIS.[3] The data available for the analysis here includes violations with food safety and labelling requirements.

As well as presenting an analysis of rejections of agrifood imports, the Trade Standards Compliance Report (TSCR) 2010 (UNIDO 2011) provided estimates of the value of losses associated with these rejections. In so doing, the aim was to assess whether rejections of agrifood imports, both in aggregate and from particular countries, represented a significant monetary loss both in absolute terms and as a proportion of the value of trade. The utility of these estimates is twofold. First, they demonstrate the extent to which import rejections per se impose a substantive economic cost on developing countries, aside from their value as a signal for broader compliance problems. Second, these values are indicative of the immediate economic benefits that are likely to flow from efforts to enhance compliance capacity. Of course, it is important to recognize that import rejections represent the "tip of the iceberg" in terms of missed export opportunities and other (e.g. reputational) consequences of the problems faced by developing countries due to non-compliance with food safety and other requirements in export markets.

Box 1.5. *The US FDA's perspective—The US Food Safety Modernization Act: Vision and mandate*

The food safety arena is extraordinarily dynamic—in the United States and across the global food system. Change is under way that is grounded in the scientific understanding of food-borne illness, its causes and how it can be prevented. Much has been done, but much remains to be done, to reduce food-borne illness. The FDA Food Safety Modernization Act (FSMA), passed by the US Congress in January 2011, provides an opportunity for significant progress in the United States and will impact on its trading partners.

The vision underlying the FSMA begins with the widely shared understanding that the current burden of food-borne illness in the United States is unacceptable. The Centers for Disease Control and Prevention estimates that in the United States 3,000 deaths, 128,000 hospitalizations and 48 million illnesses are associated annually with food-borne pathogens. In addition to this significant toll, illness and contamination incidents create a loss of confidence that can steer consumers away from healthy foods and impose a considerable economic loss on food producers and processors. With a global marketplace, this lack of confidence and economic loss can extend worldwide.

The significant public health and economic impacts of food-borne illness are what brought the food industry and consumers together with congressional leaders to enact the FSMA. This convergence was based not only on a common understanding of the food safety problem but also a remarkable consensus on the solution—a solution born out of food industry experience grappling with food safety challenges in today's complex global food system. Pathogens can enter the food supply at any stage along the pathway from the farm through processing, transport, storage and retail sale, and reasonable, science-based steps can be taken at each stage to prevent and minimize the presence and growth of pathogens and thus reduce the risk of illness.

Key elements of the FSMA strategy and mandate include:

- The need for food safety systems based on the food industry's primary responsibility to prevent food safety problems. Though many in the private sector are already implementing modern preventive measures, implementing the FSMA strategy will make prevention common practice
- The need for risk-based, prevention-oriented standards and stronger accountability for meeting them
- The need for a global approach to food safety. This includes an expectation that imported food be as safe as domestic food and a mandate for FDA to build a new import system, beginning with a new requirement for importers to verify that their foreign suppliers are implementing modern preventive measures comparable to the ones FSMA requires of US firms.

FDA has made very substantial progress on implementing the law and has developed four major framework-proposed rules currently under review within the US government. They cover preventive control standards for human and animal food facilities; produce safety standards; foreign supplier verification requirements for importers; and proposed rules establishing the accredited third-party certification programme. When these rules are in place, they will play a major role in transforming the food safety system.

FSMA implementation requires working with external stakeholders and partners in the United States and abroad. FDA has invested heavily in public engagement, including with US trading partners, to gain input on many aspects of FSMA implementation. For example, on 19 June 2012, FDA held a public meeting on international capacity building where various stakeholders, including UNIDO, provided their perspectives. With a law like FSMA that has international trade implications, notice is also sent to the World Trade Organization so that international stakeholders are made aware of proposed and final rules, and have the opportunity to provide input. FDA is committed to the FSMA vision and strategy as well as to building the modern food safety system envisioned by FSMA.

Source: This text was contributed by Dani Schor, FDA Office of Foods.

1.2. Overall level of rejection

The previous TSCR reported estimates of the value of losses associated with rejections of agrifood product imports into the EU and United States for four product categories which were the most heavily affected by import rejections, namely: (1) fish and fishery products; (2) fruit and vegetables and products; (3) herbs and spices; and (4) nuts and seeds and products. These estimates were for the period 2004 to 2008. Here, estimates for the EU and United States are updated to 2010. New estimates are, furthermore, presented for rejections of agrifood product imports into Japan and Australia.

As a starting point, this section provides an overview of trends and patterns in rejections of agrifood product imports in each of the four industrialized country markets, starting with the EU. Over the period 2002 to 2010, an average of 1,899 consignments of agrifood products were rejected annually (figure 1.1). After a sharp increase over the period 2002 to 2005, EU rejections have remained relatively stable. Once account is taken of the value of exports, which leads to an indicator termed unit rejection rate (see below), it is apparent that the rate of rejections was no higher in 2010 than in 2002. Thus, figure 1.2 reports the number of rejections per US$1 million of agrifood imports. Over

Figure 1.1. *Number of rejections of agrifood product imports, 2002–2010*

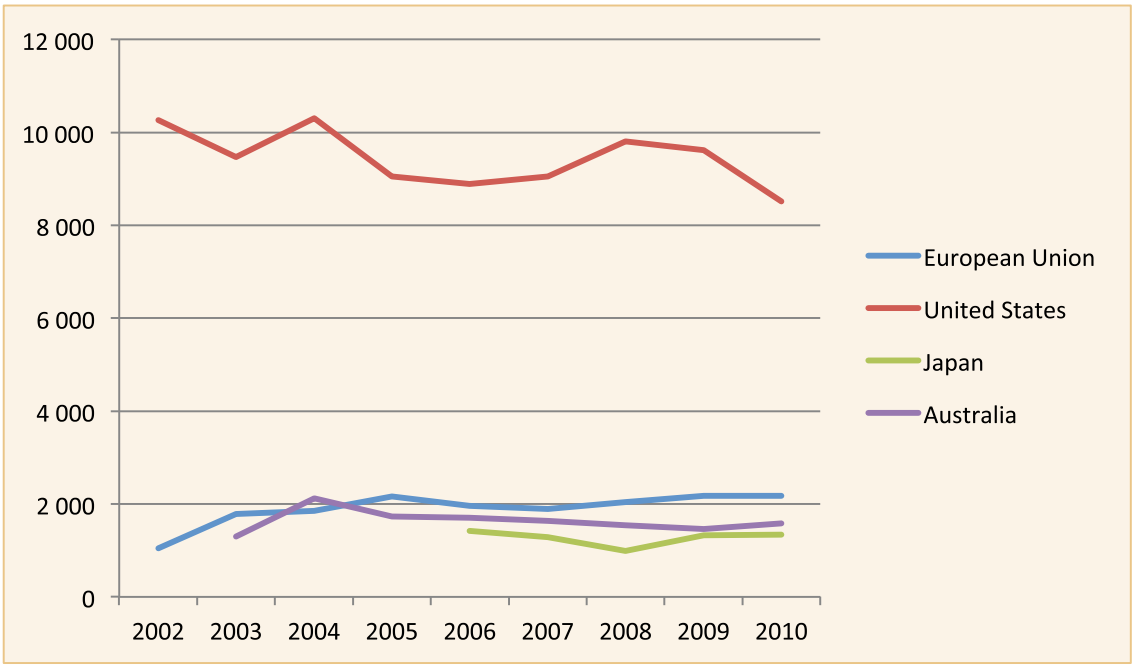
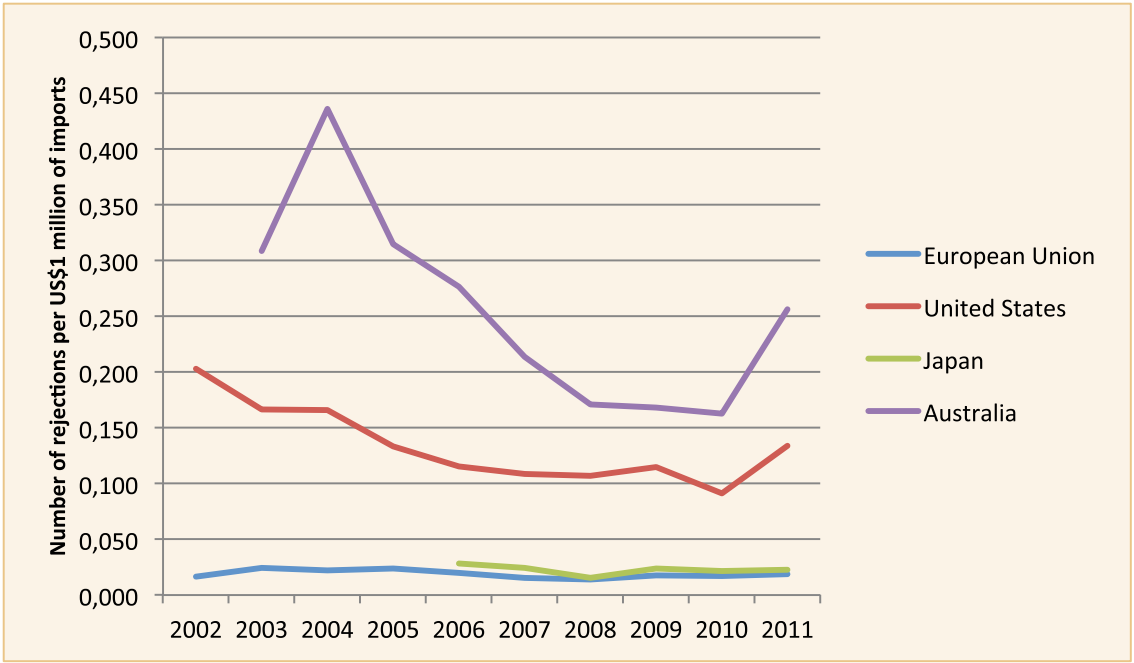


Figure 1.2. *Number of rejections of agrifood product imports per unit of imports by value, 2002–2010*



the period 2002 to 2010, this varied between 0.014 and 0.024 rejections per US$1 million of imports with an average of 0.019 rejections per US$1 million of imports. It is noteworthy that the EU had the lowest rate of agrifood product rejections over the 2002 to 2010 period.

Over the period 2002 to 2010, nuts, nut products and seeds accounted for 34 per cent of EU agrifood product rejections (table 1.1). Fish and fishery products, and fruit and vegetables and their products accounted for a further 21 and 14 per cent of rejections, respectively. Collectively, these three product catego-

Table 1.1. *Number of EU rejections of agrifood product imports from third countries by product category, 2002–2010*

Product category	Year									Total
	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Beverages	20	33	27	34	60	56	65	55	43	393
Cereals and cereal/bakery products	3	13	12	27	140	75	114	92	111	587
Confectionery and sugar	2	19	34	30	38	50	85	49	37	344
Dairy	45	39	28	45	26	29	43	19	26	300
Fats and vegetable and animal oils	3	2	76	56	8	22	19	21	17	224
Feed materials	22	16	11	36	71	106	114	113	116	605
Fish and fishery products	395	483	372	417	380	344	288	526	421	3,626
Food additives	2	2	0	1	2	4	5	3	0	19
Fruits and vegetables and products	110	165	174	240	256	308	351	344	425	2,373
Herbs and spices	26	86	160	234	131	113	91	121	205	1,167
Meat and meat products	149	147	121	110	35	43	42	71	88	806
Nuts, nut products and seeds	244	731	777	858	707	619	744	635	522	5,837
Other processed foods	25	50	65	72	107	124	77	127	160	807
Total	***1,046***	***1,786***	***1,857***	***2,160***	***1,961***	***1,893***	***2,038***	***2,176***	***2,171***	***17,088***

Table 1.2. *Number of US rejections of agrifood product imports by product category, 2002–2010*

Product category	Year									Total
	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Beverages	514	547	568	475	492	531	669	578	519	4,893
Cereals and cereal/bakery products	1,189	856	1,094	1,034	1,084	932	1,242	1,391	1,187	10,009
Confectionery and sugar	829	764	682	863	958	871	1,557	1,387	837	8,748
Dairy	668	738	748	396	324	416	480	397	330	4,497
Fats and vegetable and animal oils	43	44	49	42	39	43	37	45	32	374
Feed materials	84	199	216	75	50	126	102	393	206	1,451
Fish and fishery products	2,205	2,062	2,202	1,864	1,710	1,758	1,739	1,673	1,674	16,887
Food additives	36	67	26	29	39	74	40	54	35	400
Fruits and vegetables and products	3,183	2,804	3,400	3,077	2,770	2,743	1,946	2,091	2,093	24,107
Herbs and spices	409	381	443	400	521	635	967	620	890	5,266
Meat and meat products	21	17	27	15	18	8	7	7	14	134
Nuts, nut products and seeds	136	159	168	147	216	158	102	150	160	1,396
Other processed foods	945	829	684	636	668	759	922	836	536	6,815
Total	***10,262***	***9,467***	***10,307***	***9,053***	***8,889***	***9,054***	***9,810***	***9,622***	***8,513***	***84,977***

ries accounted for 69 per cent of EU import rejections. All other products accounted for a relatively small proportion of agrifood rejections.

Total US rejections of agrifood products averaged 9,441 annually over the period 2002 to 2010 (figure 1.1). Indeed, US rejections were at least five times greater than rejections by the EU, Japan and Australia. Over this period, however, the number of rejections fell appreciably from 10,626 in 2002 to 8,513 in 2010. Furthermore, the rate of rejections per US$1 million of agrifood product imports averaged 0.134 over the period 2002 to 2010, greater than in the EU and Japan but appreciably lower than in Australia (figure 1.2).

As with the EU, fruit and vegetables and products thereof, and fish and fishery products figured greatly in total agrifood product rejections, accounting for 28 and 20 per cent, respectively (table 1.2). Cereals and cereal/bakery products and confectionery and sugar also had significant levels of rejections. Collectively, these four product categories accounted for 70 per cent of US import rejections over the period 2002 to 2010.

Japan had the lowest number of agrifood product rejections over the period 2006 to 2010, averaging only 1,273 annually while fluctuating considerably over this time period (figure 1.1). Once account is taken of the value of agrifood product imports, however, the rate of rejections is revealed to be greater than in the

Table 1.3. *Number of Japanese rejections of agrifood product imports by product category, 2006–2010*

Product category	Year					Total
	2006	2007	2008	2009	2010	
Beverages	45	52	84	102	172	455
Cereals and cereal/bakery products	250	161	119	195	195	920
Confectionery and sugar	161	130	70	214	139	714
Dairy	33	23	12	7	19	94
Fats and vegetable and animal oils	3	6	9	9	19	46
Feed materials	0	0	0	0	0	0
Fish and fishery products	410	452	277	252	295	1,686
Food additives	6	3	2	9	18	38
Fruits and vegetables and products	286	274	222	295	231	1,308
Herbs and spices	49	38	26	45	41	199
Meat and meat products	60	58	85	87	95	385
Nuts, nut products and seeds	84	74	72	91	104	425
Other processed foods	38	17	7	20	9	91
Other products of animal origin	0	0	1	2	1	4
Total	***1,425***	***1,288***	***986***	***1,328***	***1,338***	***6,365***

Table 1.4. *Number of Australian rejections of agrifood product imports by product category, 2003–2010*

Product category	Year								Total
	2003	2004	2005	2006	2007	2008	2009	2010	
Beverages	144	266	173	176	196	215	184	188	1,542
Cereals and cereal/bakery products	206	328	341	307	292	313	314	349	2,450
Confectionery and sugar	31	33	31	44	35	32	59	44	309
Dairy	46	49	90	119	84	91	71	94	644
Fats and vegetable and animal oils	43	27	25	21	30	30	30	26	232
Feed materials	0	0	0	0	0	0	0	0	0
Fish and fishery products	193	337	345	275	259	204	187	237	2,037
Food additives	0	0	0	0	0	0	0	0	0
Fruits and vegetables and products	256	418	218	256	201	167	148	207	1,871
Herbs and spices	60	157	92	132	118	102	105	77	843
Meat and meat products	8	21	25	10	29	13	12	18	136
Nuts, nut products and seeds	60	107	123	114	153	109	70	75	811
Other processed foods	244	374	260	244	231	265	279	272	2,169
Other products of animal origin	3	7	2	0	2	4	2	1	21
Total	***1,294***	***2,124***	***1,725***	***1,698***	***1,630***	***1,545***	***1,461***	***1,588***	***13,065***

EU at 0.023 rejections per US$1 million of imports (figure 1.2). Over the period 2006 to 2010, fish and fishery products, and fruit and vegetables and their products accounted for 27 and 21 per cent of Japanese agrifood product rejections, respectively (table 1.3). Cereals and cereal/bakery products and confectionery and sugars also had significant numbers of rejections, with these four product categories accounting for 73 per cent of total Japanese import rejections.

Finally, Australian rejections of agrifood products over the period 2003 to 2010 averaged 1,633 annually (figure 1.1). The rate of rejections, however, was much higher than in the EU, US and Japan at 0.256 per US$1 million of agrifood product imports (figure 1.2). That being said, there was an appreciable decline in the rate of rejections over time, from 0.436 in 2005 to 0.163 in 2010.

Table 1.5. *Exporters of agrifood products with largest number of EU rejections, 2002–2010*

Country	Year									Total	Annual average
	2002	2003	2004	2005	2006	2007	2008	2009	2010		
Iran	63	492	491	470	243	130	172	67	64	2,192	244
Turkey	141	200	179	195	247	287	295	267	237	2,048	228
China	147	126	140	177	189	263	388	225	295	1,950	217
India	60	119	110	135	84	106	146	145	240	1,145	127
United States	25	53	51	74	231	185	144	221	156	1,140	127
Thailand	143	84	44	116	84	83	99	106	121	880	98
Brazil	102	116	109	124	89	58	61	83	109	851	95
Argentina	11	42	46	57	75	46	58	124	158	617	69
Viet Nam	67	35	55	124	68	44	54	96	70	613	68
Indonesia	39	36	70	58	43	23	14	16	23	322	36
Egypt	9	40	33	24	30	35	47	36	37	291	32
Ghana	1	8	78	58	44	31	23	23	18	284	32
Morocco	17	29	9	15	23	21	11	52	55	232	26
Ukraine	13	0	6	20	18	40	36	36	44	213	24
Nigeria	1	7	15	30	28	49	25	31	25	211	23
Bangladesh	11	18	18	25	29	15	22	54	13	205	23
Pakistan	7	12	14	25	19	28	27	17	27	176	20
Chile	9	28	20	12	8	18	8	31	23	157	17
Canada	0	7	4	6	8	12	10	79	16	142	16
Malaysia	14	34	23	7	13	21	8	7	9	136	15

Again, fish and fishery products, and fruit and vegetables and their products had significant numbers of rejections over the period 2003 to 2010 (table 1.4), accounting for 16 and 14 per cent of rejections, respectively. Cereals and cereal/bakery products and other processed foods accounted for a greater proportion of Australian import rejections. Rejections of beverages were also significant. Rejections of these five product categories accounted for 77 per cent of Australian agrifood product rejections over the period 2003 to 2010.

1.3. Making sense of the rejection data

Analysis of agrifood product import rejection data for the four industrialized country markets considered here is made challenging by the sheer volume of data. For the US alone there are 131,900 individual records between 2002 and 2010. Across the four countries, there are 166,147 rejection records. Having assembled the data in a form that permits analysis, challenges are then faced in interpreting patterns and trends in the number of rejections.[6] In particular the number of rejections at any one time will reflect prevailing levels of compliance capacity in the exporting country (which is of interest here) but also the magnitude of trade and the frequency and stringency of border controls, among other factors.

To aid interpretation of the rejection data, and account for extraneous factors such as the magnitude of trade, three specific metrics were defined in the Trade Standards Compliance Report 2010 (UNIDO 2011) and are employed here:

1 **Aggregate number of rejections**: The simple sum of the annual number of rejections over the period of analysis.[7] Here, the number of rejections will reflect both the volume of trade and the rate of non-compliance with food safety and other relevant technical requirements.

2 **Unit rejection rate**: The number of rejections per US$1 million of imports of products covered by the respective rejection data over the period of analysis. This measure takes account of the magnitude of trade, such that it provides a direct measure of the *rate* of non-compliance. This is presented as a 3 year moving average to smooth out often extraneous year-on-year variation.

3 **Relative rejection rate**: The ratio of a country's share of total rejections to its share of total imports into a certain market over the period of analysis. This provides a convenient measure of the performance of countries relative to one another over an extended period of time. Thus, a country whose share of rejections is less/more than its share of imports is defined as a relatively good/bad performer in terms of the rate of non-conformity.

6 See the Trade Standards Compliance Report 2010 (UNIDO 2011) for a more comprehensive discussion of the interpretation of import rejection data.

7 In the case of the EU and US, 2002 to 2010; in the case of Japan, 2006 to 2010; and in the case of Australia, 2003 to 2010.

Table 1.6. Unit rejection rate for EU agrifood imports from third countries, 2002–2010

Country	Average annual imports 2002–2010 (US$ million)	Moving average						
		2002–2004	2003–2005	2004–2006	2005–2007	2006–2008	2007–2009	2008–2010
Brazil	12,886	0.012	0.011	0.009	0.007	0.005	0.004	0.005
United States	8,508	0.006	0.008	0.015	0.019	0.020	0.020	0.019
Argentina	7,388	0.006	0.009	0.010	0.009	0.007	0.008	0.013
China	4,535	0.058	0.048	0.045	0.044	0.048	0.047	0.047
Norway	3,809	0.002	0.003	0.004	0.002	0.001	0.001	0.001
Turkey	3,576	0.072	0.065	0.058	0.061	0.066	0.066	0.062
Switzerland	2,841	0.003	0.003	0.002	0.003	0.002	0.002	0.002
Indonesia	2,724	0.028	0.028	0.027	0.018	0.010	0.005	0.004
Chile	2,576	0.011	0.011	0.006	0.005	0.004	0.006	0.006
South Africa	2,506	0.007	0.006	0.004	0.003	0.003	0.004	0.006
Thailand	2,472	0.060	0.046	0.042	0.043	0.031	0.029	0.031
New Zealand	2,468	0.002	0.002	0.003	0.002	0.002	0.002	0.002
Côte d'Ivoire	2,287	0.003	0.003	0.004	0.004	0.004	0.003	0.001
Morocco	2,241	0.012	0.010	0.007	0.008	0.007	0.010	0.015
India	2,206	0.065	0.074	0.059	0.051	0.041	0.046	0.061
Canada	2,176	0.002	0.003	0.003	0.004	0.004	0.014	0.014
Ecuador	1,992	0.011	0.008	0.005	0.002	0.003	0.004	0.006
Colombia	1,830	0.007	0.007	0.003	0.002	0.003	0.004	0.003
Australia	1,738	0.003	0.007	0.009	0.010	0.007	0.005	0.005
Viet Nam	1,662	0.088	0.078	0.073	0.058	0.026	0.026	0.028
All country average	—	*0.021*	*0.023*	*0.022*	*0.020*	*0.016*	*0.016*	*0.016*

Below, these three metrics are employed: first, to analyse and interpret total agrifood product import rejections in the EU, US, Japan and Australia; there is then a discussion of patterns and trends in rejections for selected product categories; and finally, an in-depth discussion of Thailand is used as an illustrative case study.

1.4. Total agrifood product rejections

Analysis of total agrifood product rejections provides an indication of the broad status of compliance performance across countries, and also the performance of any one country over time. Importantly, emphasis is put on the countries that exhibit high and persistent numbers of import rejections over the period of analysis. A scan of the raw data reveals that most countries have small numbers of rejections that often occur sporadically, such that these observations are best regarded as background "noise" to the analysis.

EU import rejections

Table 1.5 reports annual EU rejections of agrifood product imports from the 20 countries with the largest number of rejections over the period 2002 to 2010. Three countries alone accounted in excess of 11 per cent of total rejections, namely Iran, Turkey and China. Other countries with large numbers of rejections included India, United States, Thailand and Brazil. Collectively, these 20 countries accounted for 69 per cent of the EU's agrifood product import rejections.

Among the largest exporters of agrifood products to the EU, the unit rejection rate varied appreciably over the period 2002 to 2010 (table 1.6). Perhaps unsurprisingly given the numbers of rejections reported above, Turkey, India, China and Vietnam had a high-rate of rejections per US$1 million of imports, indicating relatively poor compliance performance. Conversely, other large exporters of agrifood products to the EU had a unit rejection rate that was much lower than the all-country average of 0.016 rejections per US$1 million of imports. These included a number of developing countries, namely Argentina, Brazil, Chile, Colombia, Côte d'Ivoire, Ecuador, Indonesia, Morocco and South Africa.

To provide a graphical depiction of the relative compliance performance of countries exporting agrifood products to the EU over the period 2002 to 2010, figure 1.3 plots each country's share of total EU rejections (converted into natural logarithms) against its share of total EU agrifood product imports (also converted into natural logarithms).[8] The position of each country

8 The plot excludes countries with annual agrifood product imports

Table 1.7. Reasons for EU rejections of agrifood product imports from third countries, 2002–2010

Country	Mycotoxins	Food and feed additives	Bacterial contamination	Veterinary drugs residues	Other contaminants	Pesticide residues	Heavy metal	Adulteration/missing document	Hygienic condition/controls	Labelling	Packaging	Others	Total
Iran	2,161	15	1	0	9	18	3	3	2	2	1	1	2,216
Turkey	1,278	332	120	17	115	241	23	26	24	19	0	15	2,210
China	644	328	68	299	269	31	85	227	72	26	20	78	2,147
India	332	226	186	221	78	146	84	13	49	4	4	21	1,364
United States	492	196	45	8	89	19	27	277	34	20	9	72	1,288
Thailand	24	126	277	192	85	253	55	10	17	1	5	29	1,074
Brazil	239	94	255	101	43	27	29	38	60	5	24	5	920
Argentina	351	24	100	30	40	34	8	13	36	0	2	1	639
Viet Nam	23	78	170	198	101	15	61	18	28	2	4	27	725
Indonesia	27	43	27	73	68	2	94	2	11	1	1	8	357
Egypt	151	37	25	2	29	82	2	5	6	3	1	0	343
Ghana	106	122	6	0	24	6	5	10	22	5	5	0	311
Morocco	5	19	25	0	91	49	23	0	49	9	16	0	286
Ukraine	14	19	24	28	83	19	13	15	24	2	4	8	253
Nigeria	118	40	11	0	34	0	10	1	14	1	1	1	231
Bangladesh	12	19	26	137	9	2	2	4	3	1	0	0	215
Pakistan	77	95	4	7	12	2	3	3	7	1	0	3	214
Chile	3	21	25	16	27	26	27	0	24	0	1	2	172
Canada	6	6	17	1	15	0	6	87	9	2	0	4	153
Malaysia	6	21	67	11	25	1	1	7	1	3	0	8	151
Other	586	759	400	155	105	232	419	162	293	39	42	118	3,773
Total	6,655	2,620	1,879	1,496	1,351	1,205	980	921	785	146	140	401	19,042
% rejections	34.9	13.8	9.9	7.9	7.1	6.3	5.1	4.8	4.1	0.8	0.7	2.1	100.0

Note: Reason count exceeds rejection count because any one rejection can have multiple reasons.

reflects their compliance performance relative to one another. The 45° line represents the boundary between relatively "good" and "bad" performers in terms of rates of rejections. Countries above the line are relatively bad performers in that their share of rejections exceeds their share of imports. Conversely, "good" performers are below the line; their share of rejections is less than their share of imports. Given that the positioning of countries along the horizontal axis reflects their share of agrifood imports into the EU, a distinction can also be made between larger and smaller exporters.

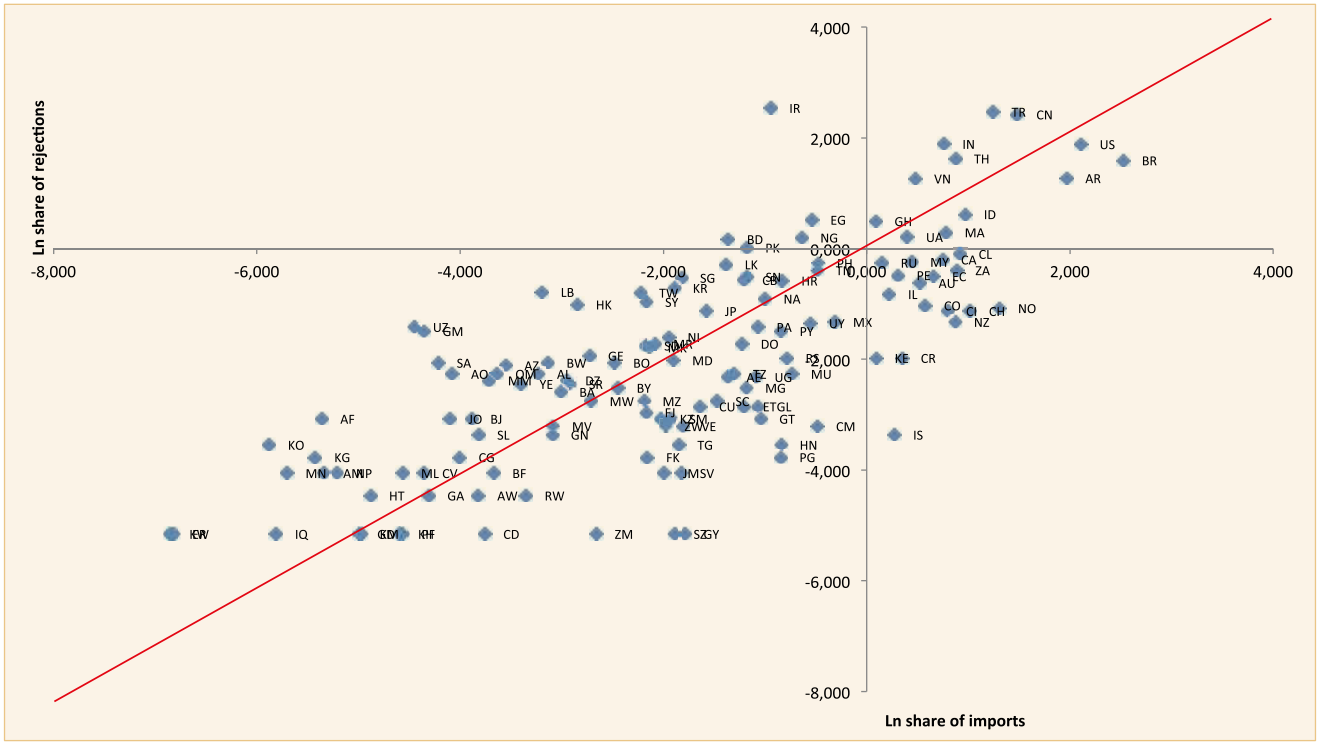
Figure 1.3 reveals that among major exporters of agrifood products to the EU over the period 2002 to 2010, Brazil and Argentina stand out as relatively "good" performers. Poor performing large exporters include China, Turkey, Thailand, India, and Viet Nam. Smaller exporters of agrifood products that stand out as having a very low relative rejection rate and, thus, are good performers include Cameroon, Costa Rica, Guyana, Honduras, Kenya, Papua New Guinea and Zambia.

Table 1.7 reports the reasons for EU rejections of agrifood product imports over the period 2002 to 2010.[9] Exceeding regulatory limits for mycotoxins was cited in almost 35 per cent of rejections. Other frequently cited reasons for rejections were the presence of unauthorized food and feed additives, bacterial contamination and exceeding regulatory limits for veterinary drug residues. It is noteworthy, however, that the number

into the EU of less than US$1 million and/or with zero rejections over the 2002 to 2010 period.

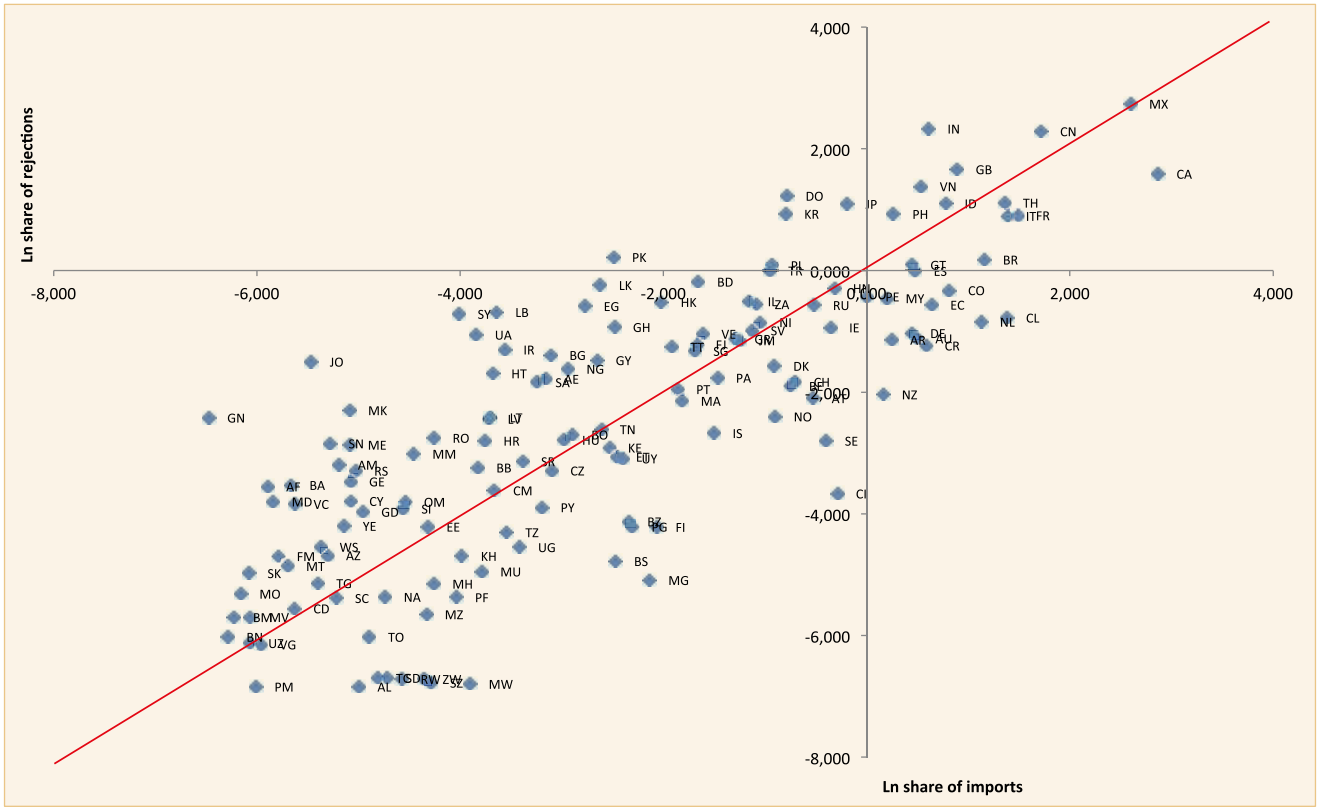
9 Note that multiple reasons can be cited for the rejection of a single consignment, such that the total count in table 1.7 exceeds the total rejections reported in table 1.1.

Figure 1.3. *Share of EU rejections of agrifood products versus share of imports from third countries, 2002–2010*



Note: Ln means natural logarithm. Includes countries with annual EU imports of agrifood products of US$1 million or above and with non-zero rejections.

Figure 1.4. *Share of US rejections of agrifood products versus share of imports, 2002–2010*



Note: Ln means natural logarithm. Includes countries with annual US imports of agrifood products of US$1 million or above and with non-zero rejections.

Table 1.8. Exporters of agrifood products with largest number of US rejections, 2002–2010

Country	Year									Total	Annual average
	2002	2003	2004	2005	2006	2007	2008	2009	2010		
Mexico	1,804	1,505	1,590	1,745	1,509	1,281	1,212	1,350	1,317	13,313	1,479
India	746	725	872	1,028	1,168	1,118	923	1,167	1,023	8,770	974
China	573	675	625	679	725	814	810	927	753	7,312	812
United Kingdom	381	289	328	245	371	432	1,340	871	321	4,578	509
Canada	424	680	628	318	274	254	504	560	584	4,226	470
Viet Nam	428	333	478	350	315	379	464	358	338	3,443	383
Dominican Republic	265	266	535	418	687	521	82	53	87	2,914	324
Thailand	306	286	453	307	222	262	249	248	295	2,628	292
Japan	757	244	192	151	295	203	413	223	138	2,616	291
Indonesia	138	269	331	216	327	383	327	264	313	2,568	285
Republic of Korea	299	344	288	200	115	167	360	274	163	2,210	246
Philippines	203	465	254	219	141	245	215	241	196	2,179	242
France	462	371	348	228	164	157	138	205	95	2,168	241
Italy	197	227	253	245	181	288	342	152	218	2,103	234
Pakistan	113	116	106	114	128	129	71	106	175	1,058	118
Brazil	125	120	155	121	129	86	92	116	87	1,031	115
Poland	259	129	121	117	68	59	62	84	56	955	106
Guatemala	107	91	87	98	110	101	141	84	119	938	104
Spain	174	94	160	58	79	64	80	63	93	865	96
Turkey	180	103	85	83	90	84	41	84	109	859	95

of rejections where veterinary drug residues were cited declined appreciably over time, from 440 in 2002 to just 58 in 2010. Conversely, instances of mycotoxins and bacterial contamination and unauthorized food or feed additives persisted throughout this period.

US import rejections

Similar to the EU market, India and China stand out as having large numbers of US border rejections of agrifood products over the period 2002 to 2010 (table 1.8), each accounting for around 10 per cent of total US rejections. However, Mexico alone accounted for almost 16 per cent of US import rejections. The UK and Canada are prominent as industrialized countries with appreciable rejections of agrifood imports over the period 2002 to 2010. Viet Nam and Thailand are other developing countries with significant rejections in the US market.

Table 1.9 presents the unit rejection rate for the largest exporters of agrifood products to the United States over the period 2002 to 2010. Countries with a particularly high-rate, indicating poor compliance performance, include India, UK, Viet Nam, China, Indonesia and Mexico. Conversely, large exporters with a low unit rejection rate include Costa Rica, Chile, the Netherlands, Ecuador, Germany, Colombia and France. Evidently, a number of large developing country exporters of agrifood products to the United States out-perform some notable industrialized countries.

However, most of the major developing country agrifood exporters to the United States over the period 2002 to 2010 have a relatively poor compliance performance on the basis of the relative rejection rate (figure 1.4). These countries include China, India, Viet Nam, Indonesia and the Philippines. It is noteworthy, however, that the UK exhibited a similarly poor performance over this period. In the case of Mexico, the large number of rejections over the 2002 to 2010 period is almost in proportion to its share of US agrifood imports, such that it is positioned just above the 45° line. Thailand and Brazil stand out as major developing country agrifood importers into the United States with a low relative rejection rate.

Table 1.10 reports the reasons for US rejections of agrifood imports over the period 2002 to 2010.[10] In stark contrast to the EU, labelling was cited in almost 39 per cent of rejections, with mycotoxins being the cause of only 0.2 per cent. Other widely cited reasons for rejections over the period were adulteration/missing documentation and hygienic condition/controls. Veterinary drug residues, cited in almost 8 per cent of EU rejections, were the cause of only 1 per cent of US rejections.

10 Note that multiple reasons can be cited for the rejections of a single consignment, such that the total count in table 10 exceeds the total rejections reported in table 2.

Table 1.9. *Unit rejection rate for US agrifood imports from third countries, 2002–2010*

Country	Average Annual Imports* 2002–2010 (US$ million)	Moving average						
		2002–2004	2003–2005	2004–2006	2005–2007	2006–2008	2007–2009	2008–2010
Canada	12,952	0.055	0.049	0.035	0.022	0.023	0.029	0.036
Mexico	10,058	0.235	0.203	0.180	0.151	0.121	0.108	0.100
China	4,244	0.249	0.216	0.183	0.167	0.150	0.157	0.148
France	3,229	0.152	0.111	0.081	0.053	0.040	0.047	0.042
Italy	2,940	0.098	0.094	0.081	0.076	0.079	0.075	0.069
Chile	2,940	0.022	0.019	0.014	0.012	0.010	0.012	0.013
Thailand	2,881	0.159	0.149	0.132	0.095	0.078	0.076	0.072
Brazil	2,397	0.086	0.072	0.061	0.042	0.033	0.035	0.035
Netherlands	2,220	0.026	0.017	0.018	0.014	0.017	0.015	0.017
United Kingdom	1,769	0.222	0.181	0.185	0.190	0.364	0.449	0.430
Colombia	1,676	0.050	0.063	0.061	0.041	0.032	0.026	0.034
Indonesia	1,640	0.212	0.210	0.196	0.187	0.189	0.167	0.140
Ecuador	1,387	0.044	0.041	0.052	0.055	0.040	0.036	0.023
India	1,341	0.683	0.718	0.802	0.851	0.772	0.765	0.671
Costa Rica	1,318	0.047	0.038	0.035	0.018	0.015	0.009	0.006
Viet Nam	1,271	0.438	0.374	0.354	0.285	0.278	0.272	0.242
Australia	1,183	0.020	0.031	0.035	0.039	0.024	0.020	0.018
Spain	1,173	0.148	0.098	0.089	0.054	0.057	0.054	0.060
Guatemala	1,161	0.110	0.097	0.097	0.092	0.093	0.078	0.076
Germany	1,152	0.061	0.037	0.030	0.017	0.016	0.021	0.023
All country average	—	*0.178*	*0.155*	*0.138*	*0.119*	*0.110*	*0.110*	*0.104*

** Note that the rejection data only report instances of non-compliance with agri-food products and requirements covered by the respective inspection system, for example OASIS in the case of the United States and RASFF in the case of the EU. Thus, the data do not record all instances of rejection, for example due to phytosanitary requirements, and as a result do not indicate the total rejections in each of the focal import markets.*

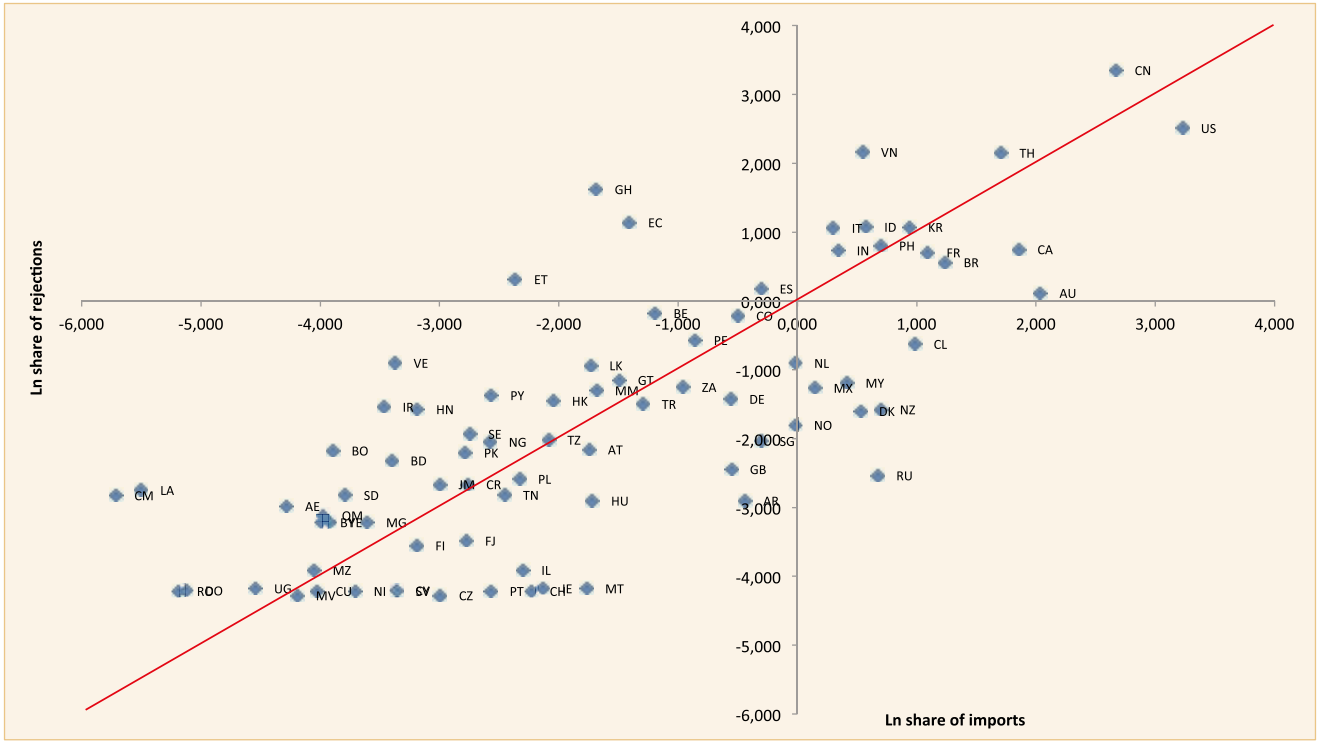
Table 1.10. *Reasons for US rejections of agrifood product imports, 2002–2010*

Country	Mycotoxins	Food and feed additives	Bacterial contamination	Veterinary drugs residues	Pesticide residues	Other contaminants	Heavy metal	Adulteration/missing document	Hygienic condition/controls	Labelling	Packaging	Others	Total
Mexico	103	1,885	1,658	15	2,537	152	83	1,059	4,445	4,425	15	21	16,398
India	39	1,539	2,232	35	750	58	2	1,571	2,258	5,365	6	3	13,858
China	11	1,906	474	767	483	241	12	1,486	2,344	1,934	19	45	9,722
United Kingdom	0	1,253	41	4	3	8	0	1,765	90	7,729	0	22	10,915
Canada	33	629	458	27	297	28	2	556	981	3,890	0	19	6,920
Viet Nam	32	402	1,088	174	19	214	0	490	1,174	997	0	25	4,615
Dominican Republic	0	27	27	0	2,550	10	0	56	175	182	3	1	3,031
Thailand	3	297	464	20	76	25	0	739	1,127	772	0	5	3,528
Japan	0	393	93	0	7	21	0	1,899	357	1,485	1	2	4,258
Indonesia	8	165	823	146	0	147	0	374	1,309	397	1	3	3,373
Republic of Korea	0	435	162	0	32	24	0	1,259	308	1,180	0	7	3,407
Philippines	4	423	225	0	12	86	0	810	868	654	6	2	3,090
France	1	127	608	0	24	16	0	1,075	224	997	1	5	3,078
Italy	1	100	149	1	17	15	0	1,496	255	1,541	0	5	3,580
Pakistan	4	184	227	0	16	13	0	341	212	757	4	0	1,758
Brazil	2	140	167	3	42	21	0	388	229	495	1	6	1,494
Poland	0	96	15	0	57	0	1	594	52	679	0	3	1,497
Guatemala	5	54	33	0	372	0	0	160	53	709	0	2	1,388
Spain	0	58	18	0	188	10	0	575	56	452	4	0	1,361
Turkey	11	140	82	0	43	8	3	1,059	91	721	6	2	1,510
Other	48	2709	2079	139	819	499	5	5,636	4,877	15,541	33	78	33,119
Total	305	12,962	11,123	1,331	8,344	1,596	108	23,388	21,485	50,902	100	256	131,900
% detentions	0.2	9.8	8.4	1.0	6.3	1.2	0.1	17.7	16.3	38.6	0.1	0.2	100.0

Table 1.11. *Exporters of agrifood products with largest number of Japanese rejections, 2006–2010*

Country	Year					Total	Annual average
	2006	2007	2008	2009	2010		
China	474	430	225	270	247	1,646	329
United States	236	122	105	172	169	804	161
Viet Nam	130	165	74	77	117	563	113
Thailand	118	101	101	117	111	548	110
Ghana	60	32	17	154	75	338	68
Ecuador	65	64	31	24	18	202	40
Indonesia	24	59	26	35	44	188	38
Italy	29	23	33	50	49	184	37
Republic of Korea	24	38	50	28	40	180	36
Canada	8	5	14	71	40	138	28
India	30	8	20	40	37	135	27
France	25	30	8	45	26	134	27
Philippines	23	21	52	18	19	133	27
Brazil	10	20	12	22	50	114	23
Australia	11	19	5	11	28	74	15
Spain	4	6	19	15	30	74	15
Ethiopia	0	2	55	3	13	73	15
Belgium	16	21	5	6	7	55	11
Colombia	0	0	1	25	28	54	11
Peru	11	3	5	9	9	37	7

Figure 1.5. *Share of Japanese rejections of agrifood products versus share of imports, 2006–2010*



Note: Ln means natural logarithm. Includes countries with annual Japanese imports of agrifood products of US$1 million or above and with non-zero rejections.

Table 1.12. Unit rejection rate for Japanese agrifood imports from third countries, 2006–2010

Country	Average annual imports 2006–2010 (US$ million)	Moving average		
		2006–2008	2007–2009	2008–2010
United States	14,361	0.012	0.009	0.010
China	8,122	0.045	0.039	0.032
Australia	4,312	0.003	0.003	0.003
Canada	3,658	0.002	0.008	0.011
Thailand	3,136	0.038	0.034	0.031
Brazil	1,974	0.008	0.010	0.012
France	1,674	0.012	0.017	0.017
Chile	1,512	0.006	0.005	0.003
Republic of Korea	1,450	0.028	0.028	0.025
New Zealand	1,142	0.002	0.002	0.002
Philippines	1,141	0.030	0.025	0.023
Russia	1,113	0.000	0.001	0.001
Indonesia	1,003	0.038	0.041	0.033
Viet Nam	974	0.130	0.113	0.089
Denmark	958	0.001	0.004	0.004
Malaysia	870	0.005	0.004	0.004
India	806	0.026	0.029	0.038
Italy	759	0.038	0.045	0.056
Mexico	659	0.006	0.004	0.005
Norway	561	0.004	0.004	0.004
All country average	—	0.023	0.021	0.020

Japanese import rejections

In the case of Japan, China alone accounted for 26 per cent of the rejections of agrifood imports over the period 2006 to 2010 (table 1.11). Other countries with substantive numbers of rejections were the United States, Viet Nam and Thailand. These four countries accounted for 55 per cent of all Japanese agrifood product rejections.

On the basis of the unit rejection rate, having accounted for the magnitude of agrifood product exports to Japan, a somewhat different picture emerges (table 1.12). Thus, Viet Nam and Italy have the highest unit rejection rate among major agrifood product exporters. China, Thailand, India and Indonesia also have a unit rejection rate that is significantly above the all-country average of 0.020. Developing countries with a low unit rejection rate, indicating good compliance performance, include Chile and Mexico.

The plot of the relative rejection rate (figure 1.5) provides further credence to the picture described above. Thus, developing countries with more significant exports of agrifood products to Japan, notably China, Thailand, Viet Nam and India had a relatively "poor" compliance performance over the period 2006 to 2010. Conversely, major industrialized country exporters, namely the United States, Canada and Australia performed well. Two significant developing country exporters with a relatively "good" compliance performance over this period were Chile and Brazil.

The main reasons for the rejection of agrifood product imports into Japan over the period 2006 to 2010 were bacterial contamination and pesticide residues (both being cited in around 22 per cent of rejections) and food and feed additives (table 1.13). Collectively, these three infractions accounted for 58 per cent of rejections. As in the EU, mycotoxins were a substantive reason for import rejections, accounting for around 13 per cent of rejections.

Table 1.13. Reasons for Japanese rejections of agrifood product imports, 2006–2010

Country	Mycotoxins	Food and feed additives	Bacterial contamination	Veterinary drugs residues	Pesticide residues	Other contaminants	Heavy metal	Adulteration/missing document	Hygienic condition/controls	Labelling	Packaging	Others	Total
China	112	248	437	262	386	36	2	34	48	0	2	78	1,646
United States	486	94	27	5	53	10	2	13	107	0	0	5	802
Viet Nam	7	32	145	297	50	1	0	0	23	0	2	6	563
Thailand	38	37	295	15	62	8	0	0	92	0	0	1	548
Ghana	0	0	1	0	204	2	0	0	131	0	0	0	338
Ecuador	0	0	1	0	173	0	0	0	28	0	0	0	202
Indonesia	9	51	49	31	18	2	0	0	30	0	0	3	188
Italy	14	7	81	63	10	9	0	2	7	0	2	2	184
Republic of Korea	1	44	75	0	60	19	0	2	10	0	0	5	180
Canada	0	23	13	2	47	0	0	5	51	0	0	3	138
India	43	15	10	0	39	4	0	0	4	0	0	4	135
France	4	29	36	4	11	2	0	1	12	0	0	0	133
Philippines	2	43	70	5	23	21	1	0	7	0	0	3	133
Brazil	3	20	10	0	11	5	0	0	37	0	0	1	113
Australia	7	35	6	2	20	13	0	0	14	0	0	1	74
Spain	2	15	29	0	2	8	1	0	7	0	0	0	69
Ethiopia	0	0	0	0	54	0	0	0	19	0	0	0	73
Belgium	1	14	15	0	9	1	0	0	3	1	0	0	55
Colombia	0	25	0	0	0	1	0	0	33	0	0	0	34
Peru	3	16	6	0	6	3	0	1	1	0	0	0	37
Other	88	105	89	8	97	21	0	9	120	0	0	15	552
Total	824	600	1,431	694	1,396	166	6	71	769	1	6	129	6,365
% detentions	12.9	13.4	22.5	10.9	21.9	2.6	0.1	1.0	12.1	0.0	0.1	2.0	100.0

Note: Reason count exceeds detention count because any one detention can have multiple reasons.

Australian import rejections

Similar to the Japanese market, China was the single country with the largest number of Australian rejections of agrifood product imports, accounting for 12 per cent over the period 2003 to 2010 (table 1.14). Other countries with large numbers of rejections were Japan, India, the United States, Thailand and Italy. Among the major exporters of agrifood products to Australia over the period, however, India had by far the highest unit rejection rate (table 1.15). Most of the other major exporters, including developing countries such as Thailand, Malaysia and Brazil, had a unit rejection rate below or about the all-country average. China's unit rejection rate fell appreciably over the period of the analysis from 0.870 between 2003 and 2005 to 0.130 from 2008 to 2010.

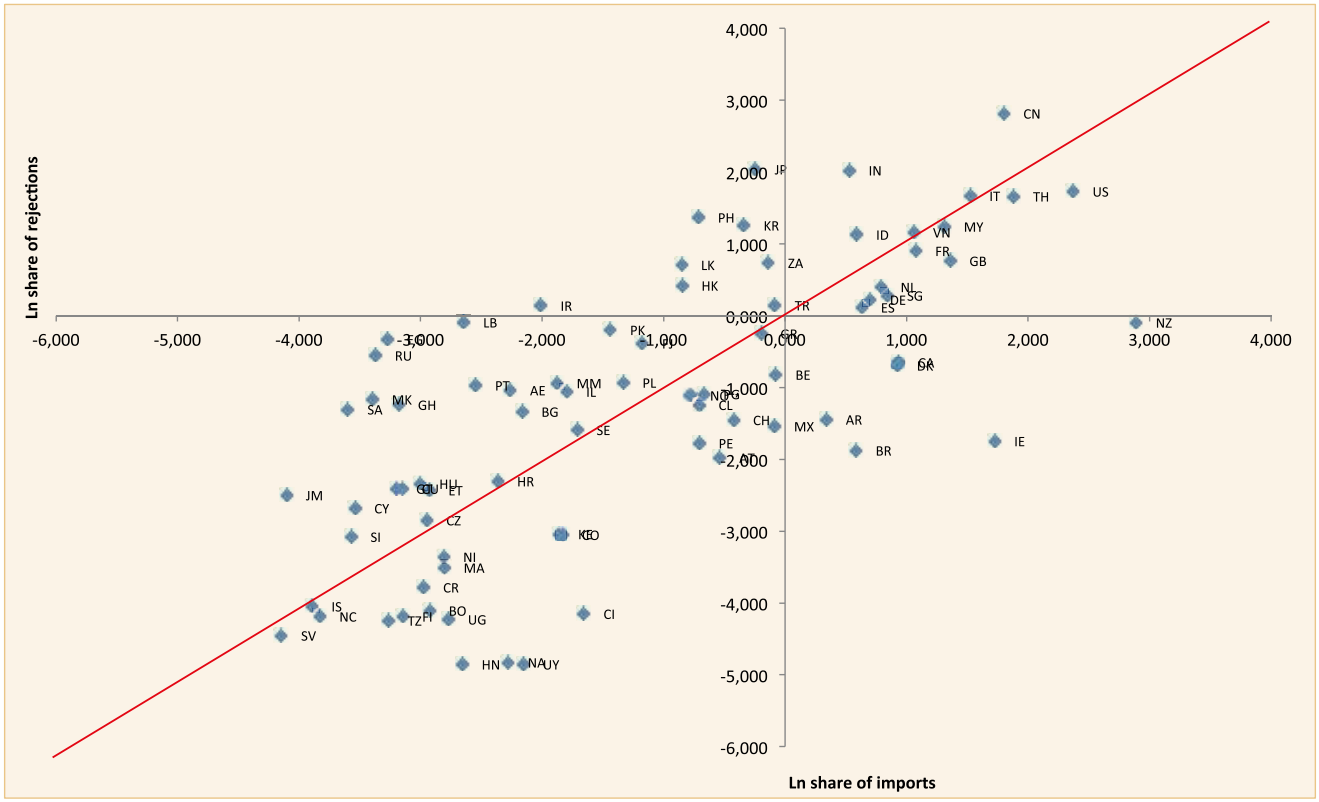
Table 1.14. *Exporters of agrifood products with largest number of Australian rejections, 2003–2010*

Country	Year								Total	Annual average
	2003	2004	2005	2006	2007	2008	2009	2010		
China	126	309	229	225	194	124	117	200	1,524	191
Japan	63	161	149	124	107	137	151	125	1,017	127
India	70	148	95	118	121	153	141	148	994	124
United States	66	107	90	87	86	97	77	131	741	93
Thailand	67	110	121	85	92	92	57	74	698	87
Italy	51	62	103	108	85	121	66	97	693	87
Philippines	76	110	57	49	65	59	58	43	517	65
Republic of Korea	27	65	58	31	54	54	66	107	462	58
Malaysia	83	98	46	50	53	44	52	26	452	57
Viet Nam	55	68	62	52	42	44	49	46	418	52
Indonesia	64	72	60	64	45	35	38	28	406	51
France	46	34	21	36	45	51	36	46	315	39
United Kingdom	27	50	48	44	32	35	26	24	286	36
South Africa	26	40	20	33	55	32	47	19	272	34
Sri Lanka	21	40	39	29	43	35	30	31	268	34
Hong Kong, China	17	40	36	27	19	21	11	34	205	26
Netherlands	7	14	19	25	14	15	61	36	191	24
Singapore	42	41	20	14	17	21	11	6	172	22
Germany	11	39	20	26	27	24	10	13	170	21
Iran	13	26	18	29	25	11	9	23	154	19

Table 1.15. *Unit rejection rate for Australian agrifood imports from third countries, 2003–2010*

Country	Average annual imports 2003–2010 (US$ million)	Moving average					
		2003–2005	2004–2006	2005–2007	2006–2008	2007–2009	2008–2010
New Zealand	1,249	0.022	0.023	0.018	0.013	0.008	0.005
United States	742	0.166	0.169	0.135	0.118	0.098	0.102
Thailand	458	0.308	0.305	0.253	0.193	0.152	0.120
China	438	0.870	0.860	0.597	0.403	0.266	0.130
Ireland	381	0.007	0.010	0.008	0.011	0.009	0.009
Italy	317	0.311	0.339	0.330	0.300	0.236	0.238
Malaysia	266	0.490	0.372	0.230	0.179	0.146	0.107
United Kingdom	259	0.188	0.206	0.169	0.138	0.110	0.095
France	209	0.276	0.196	0.175	0.188	0.170	0.154
Viet Nam	199	0.440	0.355	0.268	0.212	0.202	0.190
Denmark	176	0.061	0.085	0.065	0.055	0.031	0.035
Canada	175	0.091	0.100	0.077	0.040	0.033	0.029
Singapore	162	0.290	0.194	0.134	0.124	0.105	0.066
Netherlands	154	0.129	0.157	0.139	0.107	0.150	0.182
Germany	144	0.260	0.284	0.195	0.169	0.113	0.078
Spain	127	0.113	0.090	0.082	0.150	0.182	0.192
Indonesia	126	0.764	0.725	0.555	0.392	0.256	0.195
Brazil	125	0.011	0.013	0.012	0.012	0.021	0.035
India	118	1.245	1.301	1.019	1.023	0.964	0.971
Argentina	106	0.076	0.074	0.061	0.046	0.027	0.016
All country average	–	*0.353*	*0.342*	*0.268*	*0.220*	*0.184*	*0.167*

Figure 1.6. *Share of Australian rejections of agrifood products versus share of imports, 2003–2010*



Note: Ln means natural logarithm. Includes countries with annual Australian imports of agrifood products of US$1 million or above and with non-zero rejections.

Figure 1.6 shows that among the major exporters of agrifood products to Australia over the period 2003 to 2010, China, India and Indonesia evidently account for a much greater proportion of rejections than their share of trade, indicating relative "poor" compliance performance . Conversely, Thailand and especially Brazil and Argentina are positioned well below the 45° line, indicating that these countries exhibited a relatively "good" compliance performance in the Australian market over the 2003 to 2010 period. Malaysia and Viet Nam are positioned in or around the 45° line, suggesting that the proportion of rejections they faced over the period 2003 to 2010 is roughly in proportion to their share in Australian agrifood imports.

Similar to the United States, non-compliance with labelling requirements was the single most important reason for Australian rejections of agrifood product imports over the period 2003 to 2010 (table 1.16), accounting for almost 68 per cent of all rejections.[11] Other prominent causes of rejections were bacterial contamination and adulteration/missing documents. There were minimal rejections for all other reasons, as shown in table 1.16.

11 Note that multiple reasons can be cited for the rejections of a single consignment, such that the total count in table 16 exceeds the total rejections reported in table 1.4.

Table 1.16. *Reasons for Australian rejections of agrifood product imports, 2003–2010*

Country	Mycotoxins	Food and feed additives	Bacterial contamination	Veterinary drugs residues	Pesticide residues	Other contaminants	Heavy metal	Adulteration/missing document	Hygienic condition/controls	Labelling	Packaging	Others	Total
China	69	17	122	61	40	21	143	92	17	1,052	0	81	1,700
Japan	0	1	30	1	4	35	2	297	0	793	0	18	1,181
India	34	8	107	16	100	11	0	97	5	757	0	24	1,159
United States	6	22	9	0	38	2	7	91	1	686	0	16	878
Thailand	24	3	44	8	40	71	22	45	14	488	0	16	775
Italy	3	1	261	0	16	7	2	13	2	390	0	54	749
Philippines	34	2	7	0	1	29	15	92	2	414	0	14	610
Republic of Korea	0	3	27	0	7	11	0	83	5	385	0	7	528
Malaysia	21	0	39	1	6	4	6	17	6	392	0	10	502
Viet Nam	7	14	129	44	5	20	9	11	1	265	0	8	513
Indonesia	41	7	28	2	6	37	29	37	0	279	0	7	473
France	0	0	122	0	4	0	1	3	0	190	0	7	325
United Kingdom	2	6	9	1	3	1	1	59	0	263	0	7	352
South Africa	1	5	3	0	2	2	0	63	0	233	0	6	315
Sri Lanka	10	0	14	0	1	87	1	2	2	160	0	7	284
Hong Kong, China	8	0	23	0	1	0	4	24	5	159	0	8	232
Netherlands	0	0	0	0	3	0	33	10	0	159	0	3	208
Singapore	3	1	3	2	6	3	5	1	3	153	0	4	184
Germany	0	0	13	0	5	1	2	7	0	158	0	0	186
Iran	25	0	11	0	8	1	1	0	0	122	0	8	176
Other	22	12	289	3	79	46	79	87	6	1,931	0	118	2,672
Total	310	102	1,290	142	375	383	362	1,131	59	9,429	0	423	14,840
% detentions	2.2	0.7	9.2	1.0	2.7	2.7	2.6	8.1	0.4	67.3	0.0	3.0	100.0

1.5. Patterns and trends in import rejections at the sub-commodity level

As well as focusing on imports of agrifood products into the EU, United States, Japan and Australia in aggregate, attention can be given to particular product categories. Indeed, analysis of import rejection patterns over time and across export markets is arguably more insightful when focused on broadly similar products, especially where the nature of food safety and other compliance issues and the associated regulatory requirements differ markedly across products. Below, a summary of patterns and trends in import rejections is presented for fish and fishery products, fruit and vegetables and their products, herbs and spices, and nuts and seeds and their products. As we have seen above, these product categories account for the bulk of rejections.

Fish and fishery products

Rejections of fish and fishery product imports into the EU over the period 2002 to 2010 were dominated by Viet Nam, India, China, Indonesia and Thailand, which collectively accounted for around 43 per cent. The predominant reasons for rejections were bacterial contamination and hygienic condition/controls, which collectively were cited in 24 per cent of rejections, as well as veterinary drug residues and heavy metals. Notably, however, rejections due to veterinary drug residues declined appreciably over the period. Major developing country exporters of fish and fishery products to the EU with a "good" performance on the basis of the relative rejection rate were Argentina, Chile and Ecuador. Relatively "poor" performers included Thailand, India, Viet Nam, India and Bangladesh.

Viet Nam, Indonesia, China, India and Thailand also recorded large numbers of US rejections of fish and fishery products over the period 2002 to 2010, along with the Philippines and Mexico. As in the EU market, Ecuador and Chile were relatively "good" compliance performers among major exporters of fish and fishery products to the United States. Notably, the same is true for Thailand which was a "good" performer on the basis of the relative rejection rate, in stark contrast to its "poor" performance with imports into the EU. On the other hand, large exporters of fish and fishery products to the United States with a "poor" performance included Bangladesh, Indonesia and Viet Nam, as into the EU, and the Philippines. Like in the EU, hygienic condition/controls and bacterial contamination were major rejection reasons, collectively accounting for 61 per cent of rejections. But in contrast to the EU, only 6 per cent of rejections cited veterinary drug residues.

Around 75 per cent of Japanese rejections of fish and fishery product imports were from China, Viet Nam and Thailand over the period 2006 to 2010. These three countries, plus the Philippines, were relatively "poor" performers on the basis of the relative rejection rate. Relatively "good" performers among major exporters included Chile and, in contrast to the EU, India. Bacterial contaminants accounted for 45 per cent of rejections over the period, and veterinary drug residues a further 29 per cent.

Australian rejections of fish and fishery product imports over the period 2003 to 2010 were dominated by Japan, China, Viet Nam, Thailand, India and Sri Lanka. Almost 70 per cent of rejections were due to non-compliance with labelling requirements or bacterial contamination. On the basis of the relative rejection rate, Thailand, Viet Nam, Malaysia, India and South Africa emerge as major fish and fishery product exporters with a "good" compliance performance. By contrast, Japan and Indonesia had a relatively "poor" compliance performance over the 2003 to 2010 period. China is just above the 45° line.

Fruits and vegetables and their products

Turkey, Thailand and China accounted for 61 per cent of EU rejections of fruit and vegetable and product imports over the period 2002 to 2010, with Turkey alone accounting for 42 per cent. Among major exporters of fruit and vegetables and products to the EU, Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Kenya, Morocco and South Africa stand out as developing countries having a "good" compliance performance on the basis of the relative rejection rate. Major importers with a relatively "poor" performance were India, Thailand and Turkey. The most frequent causes of rejections were pesticide residues, being cited in 34 per cent of cases, mycotoxins and food and feed additives.

US rejections of fruits and vegetables and their products from 2002 to 2010 were dominated by Mexico, the Dominican Republic and China, collectively accounting for 38 per cent. Despite its large number of rejections, Mexico was one of the major exporters to the US with a relatively "good" compliance performance, alongside Chile, Ecuador, Costa Rica, Brazil, Colombia and Peru. Major fruit and vegetable and product exporters with a poor performance were China and Thailand. Rejections were related to a range of non-compliance issues, notably adulteration/missing documentation, labelling, pesticide residues and hygienic conditions/controls.

Over the period 2006 to 2010, China dominated Japanese rejections of fruit and vegetable and product imports, alone accounting for 40 per cent. Developing countries with major fruit and vegetable and product imports into Japan that stood out as "good" performers as judged by the relative rejection rate were Philippines, Mexico, Chile and South Africa; with Thailand the most notable "poor" performer. Pesticide residues were the cause of 41 per cent of Japanese rejections, with other significant rejection reasons being bacterial and other contaminants.

China also had the largest number of rejections of fruit and vegetable and product imports into Australia over the period 2003 to 2010, accounting for 14 per cent of the total. Other countries with substantive rejections included India, the United States, Thailand, Japan and Turkey. India, Thailand and China stood out as major exporters with relatively "poor" compliance performance over this period, while Brazil, Turkey and South Africa were "good" performers. Infractions relating to labelling requirements alone accounted for 72 per cent of rejections.

Herbs and spices

Rejections of herbs and spice imports into the EU over the period 2002 to 2010 were dominated by India and Thailand, accounting for 30 per cent and 17 per cent, respectively. Along with Turkey, these countries had a "poor" compliance performance over this period on the basis of the relative rejection rate. Major importers of herbs and spices into the EU with a relatively "good" performance included China, Viet Nam, Indonesia, Brazil and Peru. The main reasons for rejections were additives, accounting for 35 per cent, mycotoxins and bacterial contamination. Around 78 per cent of rejections cited at least one of these reasons.

India also dominated US rejections of herbs and spices over the period 2002 to 2010, accounting for 42 per cent. The only other country with substantive rejections was Mexico. Both India and Mexico were "poor" compliance performers on the basis of the relative rejection rate. Major exporters with "good" performance over the 2002 to 2010 period included China, Indonesia, Viet Nam, Turkey, Brazil and Peru. Around 40 per cent of rejections cited bacterial contamination, with a further 28 per cent of rejections being caused by labelling requirements.

There were less than 200 Japanese rejections of herb and spice imports over the period 2006 to 2010. Indeed, China and India alone had significant levels of rejections over the period, and only five countries averaged more than one rejection per year. On the basis of the relative rejection rate, however, China had a "good" compliance performance, with the relatively large number of rejections being more than offset by the volume of its herb and spice imports into Japan. India and Thailand were major exporters with a relatively "poor" compliance performance. Major reasons for rejections were pesticide residues, additives and mycotoxins.

Australian herb and spice import rejections over the period 2003 to 2010 were dominated by India (accounting for 29 per cent) and China (accounting for 16 per cent). Both of these countries had a relatively "poor" compliance performance over the period. Notably, all of the countries recording a "good" performance on the basis of the relative rejection rate were mid-rangeexporter, including Thailand, Indonesia, Viet Nam, Papua New Guinea and Turkey. Over 71 per cent of rejections were due to non-compliance with labelling requirements.

Nuts and seeds and their products

Nuts and seeds and their products accounted for 34 per cent of all EU rejections of agrifood product imports over the period 2002 to 2010. Overwhelmingly, the cause of these rejections was non-compliance with limits on mycotoxins, being cited in 91 per cent of rejections. Around 37 per cent of the nut and seed and product imports rejected were from Iran, with a further 13 per cent from Turkey and 12 per cent from China. On the basis of the relative rejection rate, Iran, China and Brazil exhibited "poor" performance among major nut and seed and product importers into the EU, while Turkey, India, and Viet Nam were "good" performers.

India, Mexico and China accounted for around 47 per cent of US rejections of nut and seed and product imports over the period 2002 to 2010. China, however, was the only major exporter exhibiting "poor" compliance performance as judged by the relative rejection rate. Thailand was a relatively "good" performer alongside Viet Nam and Turkey, while Mexico, the Philippines and India were positioned in or around the 45° line. About 40 per cent of rejections were due to non-compliance with labelling requirements.

Japanese rejections of nut and seed and product imports over the period 2006 to 2010 were predominantly from China and the United States, which collectively accounted for 62 per cent of the total. No country emerged as a particularly "good" or "poor" performer according to the relative rejection rate, with China, India and South Africa being major exporters that were positioned in or around the 45° line. The main reason for rejections was mycotoxins, accounting for 63 per cent of the total. Pesticide residues accounted for a further 28 per cent of rejections.

China and India were the main source of nut and seed and product imports rejected by Australia over the period 2003 to 2010. Both of these countries were positioned as relatively "poor" compliance performers over the period together with the Philippines. Viet Nam was the sole developing country with major nut and seed and product imports into Australia with a "good" performance. Labelling requirements and mycotoxins accounted for around 66 per cent of rejections.

1.6. Country-level analysis—Thailand

As demonstrated above, import rejection data provide a broad picture of the compliance performance of developing countries, revealing patterns and trends in rejections across countries, export markets and commodities. These data can also be used to provide a more in-depth picture of compliance performance at the country level, showing, for example, where the greatest challenges are faced and how these challenges compare to those of countries at the same level of economic development. Thailand is examined here as a case study. Thailand is an interesting case not only because it is a large exporter of agrifood products to all of the industrialized country markets examined here, but also because its compliance performance varies appreciably. For example, the relative rejection rate for agrifood products in aggregate suggests that it has performed relatively well in the US and Australian markets, but has been a relatively "poor" performer with respect to the EU and Japanese markets.

Let us start by looking at the product categories mostly affected by import rejections. In all four export markets examined here, historically, there have been significant rejections of Thai fish and fishery products and Thai fruit and vegetables and their products (figures 1.7 to 1.11).[12] In the case of the EU, however, there has been a significant change in numbers of rejections over time. Thus, rejections of Thai fish and fishery products have declined appreciably over the period 2002 to 2010, while conversely rejections of Thai fruit and vegetables and products increased. In Australia, Japan and the United States, there have been significant rejections of Thai cereals and cereal/bakery products (predominantly rice), while the EU stands out as having large numbers of rejections of herbs and spices over the period 2005 to 2010. Australian rejections of a wide range of other processed foods from Thailand have historically been high.

12 While differences in the numbers of rejections of particular agrifood products will reflect variations in the composition of trade, the fact that there are appreciable differences in the unit rejection rate across these export markets (see below) suggests that differing rates of compliance are a major determining factor.

Figure 1.7. *Number of EU rejections of agrifood products from Thailand, 2002–2010*

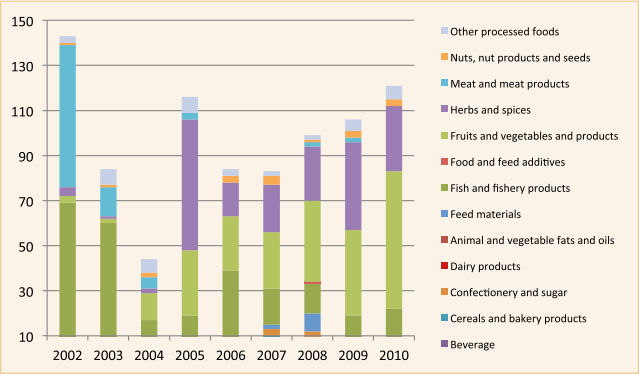


Figure 1.8. *Number of US rejections of agrifood products from Thailand, 2002–2010*

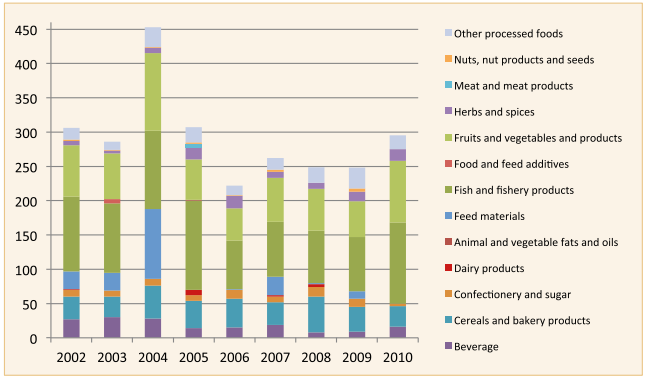


Figure 1.9. *Number of Japanese rejections of agrifood products from Thailand, 2006–2010*

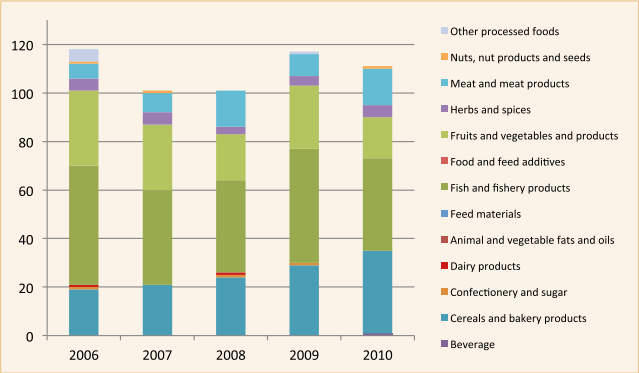


Figure 1.10. *Number of Australian rejections of agrifood products from Thailand, 2003–2010*

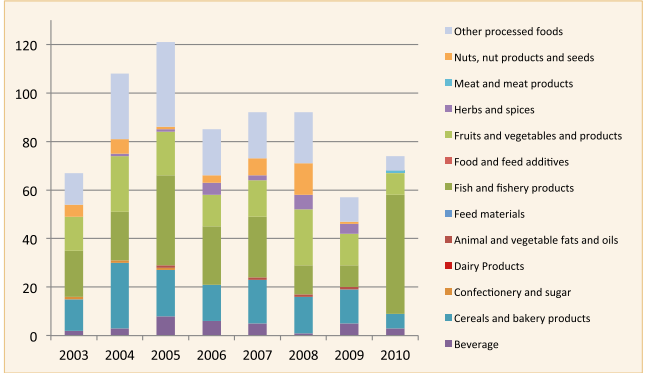


Table 1.17. Number of rejections of agrifood products from Thailand by reason, 2002–2010

Importing country	Mycotoxins	Food and feed additives	Bacterial contamination	Veterinary drugs residues	Pesticide residues	Other contaminants	Heavy metal	Adulteration/missing document	Hygienic condition/controls	Labelling	Packaging	Others	Total
Number of rejections													
EU	24	126	277	192	253	85	55	10	17	1	5	29	1,074
United States	3	297	464	20	76	25	0	739	1,127	772	0	5	3,528
Japan	38	21	295	0	62	39	0	0	92	0	0	1	548
Australia	24	3	44	8	40	71	22	45	14	488	0	16	775
Proportion of Thai rejections in the importing country													
EU	2.2	11.7	25.8	17.9	23.6	7.9	5.1	0.9	1.6	0.1	0.5	2.7	100.0
United States	0.1	8.4	13.2	0.6	2.2	0.7	0.0	20.9	31.9	21.9	0.0	0.1	100.0
Japan	6.9	3.8	53.8	0.0	11.3	7.1	0.0	0.0	16.8	0.0	0.0	0.2	100.0
Australia	3.1	0.4	5.7	1.0	5.2	9.2	2.8	5.8	1.8	63.0	0.0	2.1	100.0
Proportion of total rejections in the importing country													
EU	0.4	4.8	14.7	12.8	21.0	6.3	5.6	1.1	2.2	0.7	3.6	7.2	5.6
United States	1.0	2.3	4.2	1.5	0.9	1.6	0.0	3.2	5.2	1.5	0.0	2.0	2.7
Japan	4.6	3.5	20.6	0.0	4.4	3.4	0.0	0.0	12.1	0.0	0.0	0.8	8.6
Australia	7.5	2.3	3.3	5.6	10.4	18.3	6.0	3.7	21.5	4.8	0.0	3.7	5.2

Note: 2006–2010 for Japan; 2003–2010 for Australia.

There has also been appreciable variation across markets in the causes of agrifood product rejections (table 1.17). This variation suggests that the compliance challenges faced by Thailand reflect, at least in part, distinct regulatory requirements and the manner in which these are enforced in the four industrialized countries considered here. In the EU, Japan and the United States, a major cause of import rejections of Thai agrifood products was bacterial contamination. By contrast, in Australia less than 6 per cent of rejections cited bacterial contamination. While almost 24 per cent of EU rejections of Thai agrifood product imports were due to pesticide residues over the period 2002 to 2010, these accounted for only 2 per cent of US rejections and 6 per cent of Australian rejections. Likewise, veterinary drug residues feature prominently as a reason for EU rejections, but were minimal in the other markets. Conversely, while non-compliance with labelling requirements accounted for 63 and 22 per cent of Australian and US rejections of Thai agrifood products, respectively, EU and Japanese rejections for this reason were negligible. It is noteworthy that Thailand accounted for 21 per cent of all EU rejections due to pesticide residues over the period 2002 to 2010, 21 per cent of all Japanese rejections due to bacterial contamination over the period 2006 to 2010, and 22 per cent of all Australian rejections due to non-compliant hygienic conditions/controls over the period 2003 to 2010.

Table 1.18. Average unit rejection rate for agrifood products from Thailand, 2002–2010

Commodity	Thailand	Upper middle-income countries
EU		
Total	0.045	0.013
Fish and fishery products	0.053	0.021
Fruits and vegetables	0.047	0.010
Herbs and spices	1.045	0.097
Nuts and seeds	0.397	0.162
United States		
Total	0.109	0.126
Fish and fishery products	0.057	0.113
Fruits and vegetables	0.212	0.119
Herbs and spices	1.735	0.742
Nuts and seeds	0.084	0.131
Japan		
Total	0.036	0.007
Fish and fishery products	0.040	0.003
Fruits and vegetables	0.102	0.017
Herbs and spices	0.145	0.025
Nuts and seeds	0.163	0.261
Australia		
Total	0.214	0.266
Fish and fishery products	0.112	0.266
Fruits and vegetables	0.462	0.411
Herbs and spices	1.189	1.981
Nuts and seeds	5.623	1.454

Note: 2006–2010 for Japan; 2003–2010 for Australia.

Tables 1.18 and 1.19 report the unit and relative rejection rates for Thai imports of agrifood products into the EU, United States, Japan and Australia. The average for all upper middle-income countries (a grouping to which Thailand belongs) is provided as a comparator. These data confirm the very different experiences of Thailand across the four industrialized countries highlighted above. Thus, in the case of the EU and Japanese markets, both the unit and relative rejections rates are higher for Thailand than for all upper middle-income countries, indicating higher rates of rejections and a lower compliance performance. Conversely, Thailand performs better than upper middle-income countries as a whole in the case of the US and Australian markets. These patterns reflect the types of products exported by Thailand to particular export markets, and also the specific food safety-related problems experienced in particular markets that reflect prevailing regulatory requirements and the attention of regulatory agencies, foe example pesticide residues in the case of the EU and bacterial contamination in Japan. Appreciable variation across agrifood product categories is also observed. In the case of the EU and United States, for example, the unit and relative rejection rates over the period 2002 to 2010 were much higher for herbs and spices than for all other agrifood products. Likewise, nuts and seeds and products were subject to much higher rates of rejection in Australia than all other agrifood products.

Table 1.19. *Average relative rejection rate for agrifood products from Thailand, 2002–2010*

Commodity	Thailand	Upper middle-income countries
EU		
Total	2.42	0.69
Fish and fishery products	2.08	0.90
Fruits and vegetables	3.28	0.83
Herbs and spices	7.76	0.64
Nuts and seeds	2.61	1.03
United States		
Total	0.80	0.91
Fish and fishery products	0.38	0.75
Fruits and vegetables	1.22	0.63
Herbs and spices	2.58	0.60
Nuts and seeds	0.55	0.92
Japan		
Total	1.59	0.32
Fish and fishery products	1.57	0.11
Fruits and vegetables	2.46	0.44
Herbs and spices	1.24	0.31
Nuts and seeds	1.18	1.87
Australia		
Total	0.82	1.00
Fish and fishery products	0.36	0.87
Fruits and vegetables	1.73	1.11
Herbs and spices	0.53	0.89
Nuts and seeds	6.82	1.77

Note: 2006–2010 for Japan; 2003–2010 for Australia.

The overall picture painted by the rejection data is that Thailand has faced considerable compliance challenges across a range of agrifood products. The nature and scale of these challenges, however, has differed appreciably. Evidently, the greatest levels of rejections were recorded in the EU and Japan, where Thailand figures as a relatively "poor" performer. Conversely, much lower levels of rejections have been observed in the United States and Australia. These patterns suggest that the compliance problems faced by Thailand are somewhat commodity-specific and export market-specific, and also reflect the distinct regulatory requirements and enforcement regimes it faces in particular export markets. For example, controls on pesticide and veterinary drug residues appear to have been a particular problem with exports to the EU. Conversely, non-compliance with hygienic condition/controls, adulteration/missing documents and labelling have been the major issues in the United States.

1.7. Comparing import rejection rates across countries

Analysis of import rejection data can provide useful indicators of the compliance problems faced by developing countries. On the one hand, comparison *across countries* reveals which countries face the greatest levels of rejections and how particular countries perform relative to their competitors. On the other hand, the focus can be put on patterns and trends in rejections of *one particular country*, helping to identify the export markets and agrifood products where its compliance challenges are most acute, and the predominant reasons why rejections occur[13]. However, although only a summary is presented above, it is still easy to become daunted by the volume of data and the alternative measures of rates of rejections that can be estimated. For this reason, the Trade Standards Compliance Report 2010 (UNIDO 2011) proposed a summary measure, entitled the Relative Rejection Rate Indicator (RRRI).[14] The RRRI aims to maximize the comparability of the rejection data across export markets and to provide a relative simple basis on which to compare how countries perform relative to one another.

The RRRI for Australia, the EU, Japan and the United States is presented in Annex table B.1. For each of these export markets, the RRRI is calculated for the entire period for which data are available, thus 2003 to 2010 in the case of Australia, 2002 to 2010 in the case of the EU and United States, and 2006 to 2010 in the case of Japan. The RRRI is reported for all agrifood product imports into these countries, as well as for fish and fishery products, fruit and vegetables and products, herbs and spices, nuts and seeds and products.

By examining the RRRI estimates in Annex table B.1, the overall pattern of rates of rejection can be observed for any country importing agrifood products into the EU, the United States, Japan and/or Australia. Thus, a high RRRI (in red) indicates a relatively poor compliance performance. In the case of Thailand, this is observed for all agrifood product, fruit and vegetable and product, and herb and spice imports into the EU, and for fruit and vegetable and product imports into Japan. Conversely, a low RRRI indicating relatively good compliance performance is seen for all agrifood product imports into Australia, fish and fishery product imports into the United States and Australia, fruit and vegetable imports into the United States, nut and seed imports into the United States and Japan, and herb and spice imports into Japan and Australia.

Comparisons can also be made across countries for the trade of particular commodities into a specific export market. Taking fish and fishery product imports into the EU market as an example, developing countries with a low RRRI indicating good compliance performance include Colombia, El Salvador, Guatemala, Honduras, Mauritius and Venezuela. Conversely, high RRRIs indicating relatively poor compliance performance are recorded for Bangladesh, Benin, China, Fiji, India, Indonesia, Malaysia, Pakistan and Viet Nam, among others.

Finally, it is possible to use the RRRI to identify developing countries that appear to face *systematic* problems with compliance, indicated by medium or high values across all or most agrifood product exports and all or most export markets. This is observed, for example, in the case of Bangladesh, Pakistan and Sri Lanka.

1.8. Value of import rejections

To get an idea of the magnitude of the financial losses (or "export losses" or "foregone export revenues") related to import rejections, the same approach as in the TSCR 2010 is employed here to estimate the value of rejections of agrifood product imports into the EU (2004 to 2010), US (2002 to 2010), Japan (2006 to 2010) and Australia (2003 to 2010). Thus, for each of these markets the unit value of imports was applied to the volume of rejections for individual supplier countries in order to estimate the: (1) absolute value of rejected consignments in US$ million; and (2) relative value of rejected consignments as a proportion of the value of imports. The specific procedure was as follows:

1 The total volume of rejections for each of the four commodity groups was estimated in metric tonnes (MT) on the basis of the recorded values.[15]

2 The unit value of imports for each of the four commodity groups was estimated from United Nations COMTRADE data. These values were computed by dividing the value of imports (in US$) by the volume of imports (in MT).

3 The absolute value of rejected consignments (in US$ million) was estimated by multiplying the volume (from Stage 1) by the unit value (from Stage 2).

4 The relative value of rejected consignments (in per cent) was estimated by dividing the absolute value of rejected consignments (from Stage 3) by the total value of imports.

The validity of these estimates, of course, is dependent upon

13 Data on one important potential determinate of patterns in rejections across countries is missing, namely the rate of inspection, and should be borne in mind in interpreting data. Thus, with the exception of Australia, the rate of inspection of agrifood product imports is not known. Furthermore, the attention of border inspectors is non-random across commodities, reflecting both risk and non-risk based factors.

14 The RRRI for each country-product-export market combination is derived as follows:

1. The ratio of the proportion of import rejections to the proportion of imports is calculated in the same manner as the relative rejection rate described above.

2. For countries with non-zero rejections, the ratio derived in 1 above is converted into natural logarithms in order to generate a normal distribution. Countries with zero rejections are labelled "none'.

3 The natural logarithms are divided into three equal groups to create a tercile distribution. Countries in the highest tercile are labelled "high', middle tercile are labelled "medium' and bottom tercile are labelled "low'. An "N' indicates that the country had no rejections.

4. No RRRI is reported for countries with zero exports over the period of the analysis.

15 In the case of the US data, recording of the volume of rejected consignments is voluntary. Aside from missing values, in a number of instances the recorded values were clearly incorrect, being orders of magnitude greater than any other rejections of the respective products. In such cases, the recorded values were adjusted.

Figure 1.11. *Trend in value of EU rejections of agrifood product imports, 2004–2010 (US$ million)*

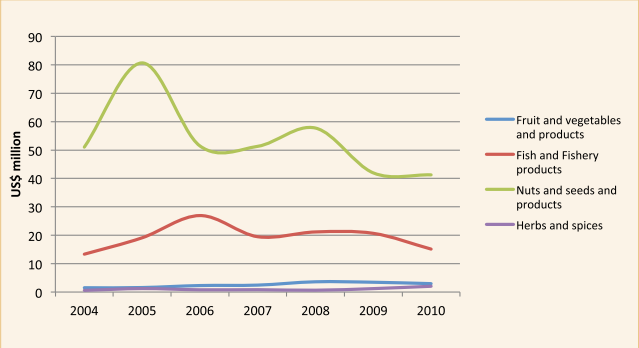


Figure 1.12. *Trend in value of US rejections of agrifood product imports, 2002–2010 (US$ million)*

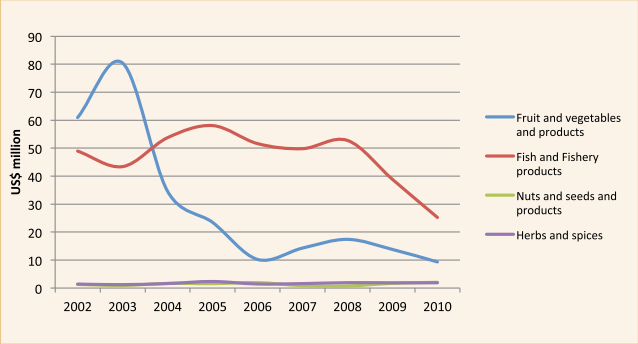


Figure 1.13. *Trend in value of Japanese rejections of agrifood product imports, 2006–2010 (US$ million)*

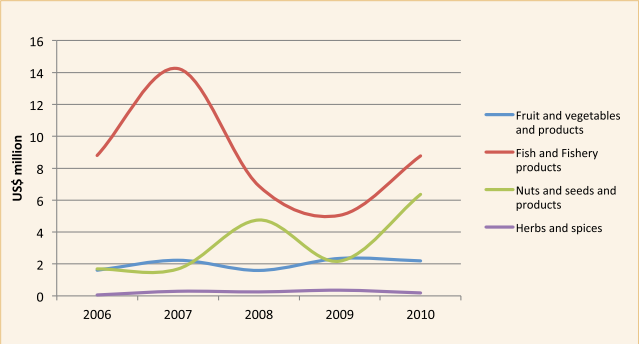
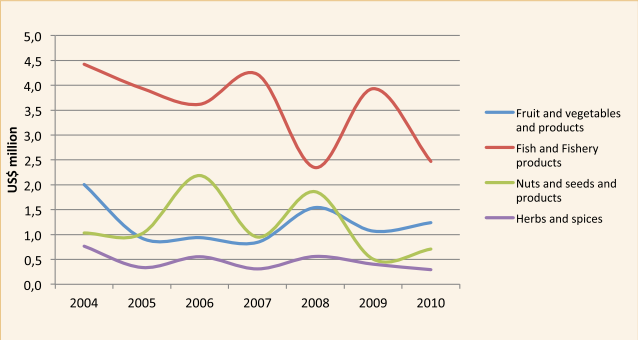


Figure 1.14. *Trend in value of Australian rejections of agrifood product imports, 2003–2010 (US$ million)*



the quality of the data on recorded volumes of rejections in each of the four industrialized country markets examined here. In some cases, the volume is recorded in units from which it is not possible to estimate a unit value, for example number of items or pieces, and in others the data are missing altogether. The amount of spurious or missing data varies significantly across markets and product categories (see Annex table B.2). For example, over 30 per cent of data are missing in the case of herbs and spice imports into Japan and the EU, and over 25 per cent are missing in the case of fruit and vegetable and product imports into the EU and Australia. In these cases, in particular, the estimate below should be treated with some caution.[16]

Over the period 2004 to 2010, EU rejections of nuts and seeds and products were valued at US$375 million (figure 1.11), accounting for around 1.2 per cent of the value of EU imports (Annex figure B.1). Over this period, however, the annual value of rejections almost halved from over US$80 million in 2005 to around US$41 million in 2010. While the value of fish and fishery product rejections totalled US$136 million from 2004 to 2010, these accounted for only 0.1 per cent of the value of EU imports. EU import rejections of fruit and vegetables and their products, and herbs and seeds accounted for less than 0.1 per cent of the value of imports over the 2004 to 2010 period.

Over the period 2002 to 2010, US rejections of fruit and vegetables and their products were valued at US$264 million, accounting for 0.2 per cent of the value of US imports (figures 1.12 and Annex figure B.2). Over time, however, the value of these rejections declined appreciably, from US$80 million (accounting for 0.7 per cent of the value of US imports) in 2003 to US$9 million (accounting for less than 0.1 per cent of the value of US imports) in 2010. Rejections of fish and fishery products were valued at US$422 million over the 2002 to 2010 period, accounting for 0.4 per cent of the value of US imports.

Figures 1.13 and Annex figure B.3 report the absolute and relative value of Japanese import rejections over the period 2006 to 2010. The only product group for which there were substantive "export losses" was fish and fishery products, with the value of rejections averaging almost US$9 million per annum. Given the magnitude of Japanese fish and fishery product imports, however, these rejections only accounted for 0.1 per cent of the value of imports. While rejections of nuts and seeds and products were valued at less than US$9 million over the 2006 to 2010 period, these accounted for 0.6 per cent of the value of imports.

The absolute value of Australian import rejections was minimal over the period 2003 to 2010, with annual rejections of all four product categories being valued at less than US$5 million (figure 1.14), especially relative to the EU and the United States. As a proportion of the value of imports, however, these rejections were somewhat more significant (Annex figure B.4). Thus,

16 It is noteworthy that Buzby *et al.* (2008) question the validity of using the US OASIS data for estimating the value of rejections due to the voluntary nature of disclosure, leading to significant amounts of missing data.

Table 1.20. Value of EU rejections of fish and fishery product imports

Country	2006	2007	2008	2009	2010	Total 2004-10
Absolute value (US$ million)						
Indonesia	2.1	0.9	8.2	0.1	0.3	16.5
Viet Nam	1.9	0.9	0.7	3.3	2.1	14.3
India	1.6	1.4	2.1	3.1	2.0	12.6
Australia	10.7	0.4	0.0	0.0	0.0	11.8
China	1.5	2.9	1.6	2.1	1.9	11.4
Bangladesh	2.1	0.6	1.3	1.2	0.8	9.0
Morocco	0.5	0.8	0.9	4.4	0.7	7.5
Brazil	0.2	3.4	0.0	0.2	0.1	4.4
Russia	0.1	0.1	0.0	0.5	0.0	3.9
Senegal	0.1	1.3	0.3	0.1	1.0	3.4
% Value of imports						
Indonesia	0.7	0.3	2.4	0.0	0.1	0.8
Viet Nam	0.3	0.1	0.1	0.3	0.2	0.3
India	0.3	0.2	0.3	0.5	0.3	0.3
Australia	26.5	1.5	0.0	0.0	0.0	5.2
China	0.1	0.2	0.1	0.1	0.1	0.1
Bangladesh	0.9	0.2	0.5	0.5	0.3	0.5
Morocco	0.1	0.1	0.1	0.4	0.1	0.1
Brazil	0.1	2.0	0.0	0.2	0.1	0.4
Russia	0.0	0.0	0.0	0.1	0.0	0.1
Senegal	0.1	0.5	0.1	0.0	0.5	0.2

the estimated export losses caused by rejections of herbs and spices, and nuts and seeds and their products average around 1 per cent of the value of imports over the 2003 to 2010 period.

Looking across the estimates presented above, and as highlighted in the TSCR 2010, it is evident that the value of economic losses associated with import rejections is low. Thus, for no product category does the annual value of import rejections account for even 2 per cent of the value of imports. Clearly, there is an element of bias in the underlying calculations. In some cases, there is a significant amount of missing data such that the values reported above are under-estimates. Conversely, the use of unit values means that an average value is applied to the recorded value of import rejections. Specifically, to the extent that there is a systematic inverse variation between the volume of rejected consignments and their value, this will introduce an upwards bias. Even after taking this bias into account, however, it is evident that the direct economic cost of rejections of agrifood product imports is relatively small.

While the aggregate value of losses, whether in absolute or relative terms, reported above provide a snapshot of the overall significance of economic losses associated with rejections of agrifood product imports into Australia, the EU, Japan and the United States, they hide important variations across exporting countries. Thus, in the remainder of this chapter the focus is on the value of losses at the individual country and country income grouping levels. The first product category to be examined is fish and fishery products.

Fish and fishery products

Table 1.20 reports the absolute and relative value of EU rejections of fish and fishery product imports over the period 2006 to 2010. As with all the tables below, the ten countries with the largest losses are reported. Five countries had total losses exceeding US$10 million over the period, namely Indonesia, Viet Nam, India, Australia and China. With the one exception of Australia, however, these losses accounted for less than 1 per cent of the value of imports over the 2004 to 2010 period. Indeed, among all of the countries in table 1.20, annual losses were typically less than 0.3 per cent of the value of their fish and fishery product imports into the EU.

The absolute and relative value of US rejections of fish and fishery product imports over the period 2002 to 2010 was significantly greater than in the EU (table 1.21). Thus, six countries had rejections valued at over US$50 million over the period, and with China having rejections worth US$77 million. Rejections of fish and fishery products from Viet Nam and Bangladesh were valued at US$73 million and US$22 million, respectively, representing more than 1 per cent of the value of their imports into

Table 1.21. *Value of US rejections of fish and fishery product imports*

Country	2006	2007	2008	2009	2010	Total 2002-10
Absolute value (US$ million)						
China	22.6	13.9	11.4	8.0	4.2	77.2
Viet Nam	7.0	8.7	9.1	6.5	3.2	73.0
Indonesia	6.0	6.6	5.8	5.3	6.0	53.6
India	2.1	1.9	1.1	1.7	0.9	28.1
Bangladesh	1.1	0.8	3.0	1.8	1.1	21.7
Thailand	1.8	2.7	2.8	2.0	1.2	20.5
Philippines	0.7	1.9	1.2	1.7	0.3	12.5
Honduras	0.2	0.0	0.3	0.6	0.0	11.8
Mexico	1.0	0.7	0.9	0.8	0.1	10.6
Japan	1.3	1.3	0.0	0.0	0.0	7.9
% Value of imports						
China	1.1	0.7	0.5	0.4	0.2	0.5
Viet Nam	1.0	1.2	1.1	0.9	0.3	1.1
Indonesia	0.7	0.7	0.5	0.6	0.6	0.7
India	0.6	0.7	0.5	0.7	0.2	0.9
Bangladesh	0.5	0.5	2.2	1.8	1.1	1.8
Thailand	0.1	0.1	0.1	0.1	0.0	0.1
Philippines	0.3	0.7	0.4	0.7	0.1	0.6
Honduras	0.1	0.0	0.2	0.4	0.0	0.9
Mexico	0.2	0.1	0.2	0.2	0.0	0.3
Japan	0.6	0.6	0.0	0.0	0.0	0.4

Table 1.22. *Value of Japanese rejections of fish and fishery product imports*

Country	2006	2007	2008	2009	2010	Total 2006-10
Absolute value (US$ million)						
Viet Nam	3.5	6.5	2.0	2.0	3.7	17.6
China	3.6	4.7	2.8	2.0	3.3	16.3
Indonesia	0.6	1.7	0.7	0.3	0.2	3.5
Thailand	0.5	0.6	0.6	0.6	0.5	2.8
Chile	0.4	0.1	0.3	0.1	0.3	1.1
Turkey	0.0	0.3	0.1	0.0	0.0	0.4
Hong Kong, China	0.0	0.0	0.0	0.0	0.3	0.4
India	0.1	0.0	0.0	0.1	0.1	0.3
Philippines	0.0	0.0	0.2	0.0	0.0	0.3
Fiji	0.0	0.1	0.0	0.0	0.0	0.1
% Value of imports						
Viet Nam	0.4	0.9	0.3	0.3	0.5	0.5
China	0.1	0.2	0.1	0.1	0.1	0.1
Indonesia	0.1	0.2	0.1	0.0	0.0	0.1
Thailand	0.0	0.1	0.1	0.1	0.0	0.1
Chile	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	0.0	0.4	0.2	0.0	0.0	0.1
Hong Kong, China	0.0	0.0	0.0	0.1	0.2	0.1
India	0.0	0.0	0.0	0.0	0.0	0.0
Philippines	0.0	0.0	0.1	0.0	0.0	0.0
Fiji	0.0	0.8	0.0	0.0	0.0	0.1

Table 1.23. Value of Australian rejections of fish and fishery product imports

Country	2006	2007	2008	2009	2010	Total 2003-10
Absolute value (US$ million)						
China	0.7	1.2	0.3	0.9	0.8	6.3
Viet Nam	0.5	0.1	0.4	0.5	0.7	3.6
Denmark	0.6	0.2	0.5	0.4	0.0	2.3
India	0.3	0.6	0.0	0.0	0.0	1.8
Thailand	0.2	0.2	0.1	0.2	0.3	1.7
Indonesia	0.1	0.2	0.2	0.0	0.0	1.3
Malaysia	0.0	0.4	0.2	0.3	0.0	1.1
Norway	0.2	0.0	0.0	0.4	0.0	0.9
Japan	0.0	0.1	0.1	0.0	0.1	0.9
New Zealand	0.1	0.1	0.1	0.0	0.1	0.7
% Value of imports						
China	0.7	1.0	0.3	0.7	0.5	0.8
Viet Nam	0.4	0.1	0.3	0.4	0.5	0.4
Denmark	3.1	1.4	2.6	2.4	0.0	1.8
India	1.4	3.3	0.8	0.2	1.3	1.5
Thailand	0.1	0.1	0.0	0.1	0.1	0.1
Indonesia	0.7	1.0	0.7	0.1	0.2	0.7
Malaysia	0.1	1.2	0.3	0.6	0.0	0.4
Norway	1.3	0.1	0.1	2.2	0.0	0.8
Japan	0.1	1.6	0.5	0.3	0.5	1.0
New Zealand	0.0	0.1	0.1	0.0	0.1	0.1

the US. More generally, rejections accounted for greater than 0.5 per cent of the value of imports in many years and for most of the countries in table 1.21.

In the case of Japan, two countries stand out as having significant rejections of fish and fishery products over the period 2006 to 2010, namely Viet Nam and China (table 1.22). Both countries had rejections valued exceeding US$16 million. These rejections, however, accounted for only 0.5 per cent and 0.1 per cent of the value of Japanese fishery imports from Viet Nam and China, respectively. All other countries had rejections valued at less than US$2 million annually over the 2006 to 2010 period, typically accounting for 0.1 per cent or less of the value of their imports into Japan.

As in the US and Japanese markets, Viet Nam and China incurred the largest losses due to Australian rejections of fish and fishery product imports (table 1.23). The overall magnitude of these losses over the period 2003 to 2010, however, was much lower, amounting to US$6 million and accounting for 0.8 per cent of the value of imports in the case of China and US$3.6 million and accounting for 0.4 per cent of the value of imports in the case of Viet Nam. The two countries for which Australian rejections of fish and fishery products accounted for a more substantive share of the value of imports were Denmark and India.

Fruit and vegetables and their products

Tables 1.24 to 1.27 report the absolute and relative value of rejections of fruit and vegetable and product imports into the EU, United States, Japan and Australia for ten supplier countries. In the case of Australia, the EU and Japan, these losses tend to be small, amounting to much less than US$1 million annually and accounting for less than 0.1 per cent of the value of exports. The notable exceptions are Turkey (in the case of the EU), China (in the case of Japan) and the United States (in the case of Australia).

In the case of the US market, some countries recorded significant losses due to rejections of fruit and vegetable and product shipments (table 1.25). Most notably, China and Mexico had rejections valued at US$92 million and US$55 million over the period 2002 to 2010, respectively. For China, these losses accounted for 1 per cent of the value of its fruit and vegetable and product imports into the United States over this period. However, the value of losses incurred by China has declined appreciably, from US$46 million (accounting for 8.6% of the value of imports) in 2003 to US$0.7 million (accounting for less than 0.1 per cent of the value of imports) in 2010. Other countries with losses exceeding 1 per cent of the value of imports were the Dominican Republic and Poland.

Table 1.24. *Value of EU rejections of fruit and vegetables and product imports*

Country	2006	2007	2008	2009	2010	Total 2004-10
Absolute value (US$ million)						
Turkey	1.4	1.3	2.1	1.3	0.8	8.7
China	0.1	0.1	0.5	0.2	0.3	1.5
Argentina	0.0	0.1	0.2	0.4	0.2	1.0
Uzbekistan	0.2	0.0	0.0	0.1	0.5	0.9
Egypt	0.0	0.1	0.0	0.1	0.3	0.6
Brazil	0.0	0.0	0.0	0.3	0.2	0.5
Iran	0.1	0.0	0.1	0.0	0.0	0.4
Tunisia	0.0	0.2	0.0	0.0	0.0	0.3
Chile	0.0	0.1	0.1	0.1	0.0	0.3
Afghanistan	0.2	0.0	0.0	0.0	0.0	0.3
% Value of imports						
Turkey	0.1	0.1	0.1	0.1	0.0	0.1
China	0.0	0.0	0.0	0.0	0.0	0.0
Argentina	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	4.0	0.0	0.0	2.3	5.8	1.9
Egypt	0.0	0.0	0.0	0.0	0.0	0.0
Brazil	0.0	0.0	0.0	0.0	0.0	0.0
Iran	0.1	0.0	0.1	0.0	0.0	0.1
Tunisia	0.0	0.1	0.0	0.0	0.0	0.0
Chile	0.0	0.0	0.0	0.0	0.0	0.0
Afghanistan	4.8	0.0	0.0	0.0	0.8	2.9

Table 1.25. *Value of US rejections of fruit and vegetable and product imports*

Country	2006	2007	2008	2009	2010	Total 2002-10
Absolute value (US$ million)						
China	1.5	0.8	3.9	1.0	0.7	92.2
Mexico	4.5	2.8	2.5	6.9	6.3	55.2
Brazil	0.1	0.1	0.0	0.7	0.1	19.7
Thailand	0.9	0.3	0.2	0.2	0.1	18.3
Turkey	0.3	0.2	0.3	0.3	0.2	11.5
Dominican Republic	0.3	0.4	3.9	0.1	0.1	10.1
Chile	0.2	0.9	1.5	0.9	0.1	6.9
Argentina	0.2	1.6	0.1	0.0	0.1	4.6
Poland	0.0	0.0	0.2	0.0	0.1	4.2
Peru	0.3	1.7	0.3	0.1	0.3	3.3
% Value of imports						
China	0.2	0.1	0.2	0.1	0.0	1.0
Mexico	0.1	0.1	0.0	0.1	0.1	0.1
Brazil	0.0	0.0	0.0	0.2	0.0	0.6
Thailand	0.3	0.1	0.0	0.0	0.0	0.6
Turkey	0.2	0.1	0.1	0.2	0.1	0.9
Dominican Republic	0.5	0.6	5.3	0.1	0.1	1.6
Chile	0.0	0.1	0.1	0.0	0.0	0.0
Argentina	0.0	0.4	0.0	0.0	0.0	0.2
Poland	0.0	0.0	0.3	0.0	0.3	1.0
Peru	0.1	0.3	0.0	0.0	0.0	0.1

Table 1.26. *Value of Japanese rejections of fruit and vegetable and product imports*

Country	2006	2007	2008	2009	2010	Total 2006-10
Absolute value (US$ million)						
China	1.1	1.9	0.8	1.4	0.7	5.8
Brazil	0.0	0.1	0.0	0.1	0.9	1.1
Thailand	0.0	0.1	0.1	0.1	0.1	0.5
Viet Nam	0.1	0.0	0.0	0.1	0.2	0.4
Indonesia	0.0	0.0	0.0	0.2	0.0	0.3
South Africa	0.3	0.0	0.0	0.0	0.0	0.3
Mexico	0.0	0.0	0.0	0.0	0.1	0.1
Chile	0.0	0.1	0.0	0.0	0.0	0.1
Romania	0.0	0.0	0.0	0.0	0.1	0.1
Myanmar	0.0	0.0	0.1	0.0	0.0	0.1
% Value of imports						
China	0.1	0.1	0.0	0.1	0.0	0.1
Brazil	0.0	0.0	0.0	0.1	0.7	0.1
Thailand	0.0	0.1	0.0	0.0	0.0	0.0
Viet Nam	0.2	0.1	0.2	0.4	0.5	0.3
Indonesia	0.1	0.1	0.0	0.7	0.1	0.2
South Africa	0.3	0.0	0.0	0.0	0.0	0.1
Mexico	0.0	0.0	0.0	0.0	0.0	0.0
Chile	0.0	0.1	0.0	0.0	0.0	0.0
Romania	0.0	0.0	0.0	0.0	46.4	21.2
Myanmar	0.0	0.1	0.6	0.0	0.0	0.1

Table 1.27. *Value of Australian rejections of fruit and vegetable and product imports*

Country	2006	2007	2008	2009	2010	Total 2003-10
Absolute value (US$ million)						
United States	0.1	0.3	0.3	0.5	0.6	2.4
China	0.2	0.1	0.1	0.1	0.0	1.4
Italy	0.1	0.0	0.1	0.0	0.1	1.0
Thailand	0.0	0.0	0.0	0.1	0.1	0.7
Netherlands	0.1	0.0	0.0	0.0	0.2	0.6
Greece	0.0	0.0	0.1	0.0	0.0	0.5
Turkey	0.1	0.1	0.0	0.0	0.0	0.5
Argentina	0.0	0.0	0.0	0.0	0.0	0.3
Iran	0.0	0.0	0.0	0.0	0.0	0.3
India	0.1	0.0	0.0	0.0	0.0	0.2
% Value of imports						
United States	0.1	0.2	0.2	0.3	0.3	0.2
China	0.2	0.1	0.1	0.1	0.0	0.1
Italy	0.1	0.0	0.1	0.0	0.1	0.2
Thailand	0.1	0.0	0.1	0.2	0.1	0.2
Netherlands	0.5	0.2	0.1	0.0	0.9	0.4
Greece	0.0	0.0	0.3	0.0	0.0	0.2
Turkey	0.2	0.2	0.0	0.0	0.0	0.1
Argentina	0.4	0.2	0.3	0.0	0.3	0.5
Iran	0.3	0.3	0.1	0.1	0.2	0.5
India	1.0	0.4	0.1	0.1	0.1	0.3

Herbs and spices

Across the EU, US, Japanese and Australian markets, the value of losses due to rejections of herb and spice imports were minimal (tables 1.28 to 1.31). Thus, even with imports from India into the United States where the largest losses were recorded, these only amounted to US$5 million over the period 2002 to 2010. Notably, however, for a number of countries with lower levels of trade the losses incurred represented a substantive share of the value of imports. For example, over the period 2003 to 2010, Australian rejections of herb and spice imports from the Republic of Korea and Papua New Guinea accounted for 5 per cent and 4 per cent of the value of imports, respectively. Likewise, the value of EU rejections of herb and spice imports from Jamaica over the period 2004 to 2010 amounted to 2.4 per cent of the value of imports. In this latter case, this predominantly reflected very large rejections in 2005, amounting to over 19 per cent of the value of imports in that single year.

Table 1.28. *Value of EU rejections of herb and spice imports*

Country	2006	2007	2008	2009	2010	Total 2004-10
Absolute value (US$ million)						
India	0.1	0.4	0.2	0.3	1.4	2.7
Viet Nam	0.2	0.1	0.0	0.2	0.1	0.7
Brazil	0.2	0.0	0.1	0.0	0.0	0.6
Peru	0.0	0.1	0.0	0.3	0.1	0.6
China	0.0	0.0	0.0	0.1	0.2	0.5
Pakistan	0.0	0.0	0.0	0.1	0.0	0.3
Turkey	0.0	0.0	0.0	0.1	0.0	0.3
Indonesia	0.1	0.0	0.1	0.0	0.1	0.3
Ukraine	0.1	0.0	0.1	0.0	0.0	0.2
Egypt	0.0	0.0	0.0	0.0	0.0	0.2
% Value of imports						
India	0.1	0.3	0.1	0.2	0.9	0.3
Viet Nam	0.3	0.2	0.0	0.2	0.1	0.1
Brazil	0.3	0.0	0.1	0.0	0.0	0.1
Peru	0.0	0.3	0.0	0.6	0.2	0.2
China	0.0	0.0	0.0	0.1	0.1	0.1
Pakistan	1.3	0.0	0.0	1.4	0.1	1.1
Turkey	0.0	0.1	0.0	0.2	0.1	0.1
Indonesia	0.1	0.0	0.1	0.0	0.1	0.1
Ukraine	3.1	1.1	1.3	0.0	0.0	1.1
Egypt	0.0	0.0	0.1	0.0	0.0	0.1

Table 1.29. *Value of US rejections of herb and spice imports*

Country	2006	2007	2008	2009	2010	Total 2002-10
Absolute value (US$ million)						
India	0.3	0.8	0.5	0.8	0.5	5.2
Mexico	0.2	0.1	0.6	0.2	0.1	1.8
Peru	0.1	0.0	0.2	0.2	0.3	1.5
Sri Lanka	0.4	0.1	0.0	0.0	0.1	0.9
China	0.1	0.1	0.2	0.1	0.1	0.8
Turkey	0.1	0.1	0.1	0.0	0.1	0.8
Brazil	0.0	0.1	0.0	0.0	0.0	0.8
Jamaica	0.0	0.0	0.0	0.0	0.0	0.5
Viet Nam	0.0	0.1	0.0	0.1	0.2	0.4
Colombia	0.0	0.0	0.0	0.0	0.3	0.4
% Value of imports						
India	0.3	0.5	0.2	0.5	0.2	0.4
Mexico	0.3	0.2	1.0	0.2	0.1	0.4
Peru	0.3	0.0	0.3	0.4	0.6	0.4
Sri Lanka	4.1	0.8	0.0	0.3	0.7	1.0
China	0.1	0.0	0.1	0.1	0.1	0.1
Turkey	0.3	0.2	0.2	0.1	0.3	0.3
Brazil	0.1	0.2	0.0	0.0	0.1	0.2
Jamaica	1.1	0.5	0.0	0.0	0.0	2.6
Viet Nam	0.1	0.2	0.0	0.2	0.3	0.1
Colombia	0.0	0.0	0.1	0.0	2.4	0.6

Table 1.30. *Value of Japanese rejections of herb and spice imports*

Country	2006	2007	2008	2009	2010	Total 2006-10
Absolute value (US$ million)						
China	0.0	0.3	0.2	0.1	0.1	0.6
India	0.0	0.0	0.0	0.1	0.1	0.2
Iran	0.0	0.0	0.0	0.2	0.0	0.2
Brazil	0.0	0.0	0.0	0.0	0.0	0.1
Sri Lanka	0.0	0.0	0.0	0.0	0.0	0.0
Myanmar	0.0	0.0	0.0	0.0	0.0	0.0
Hong Kong, China	0.0	0.0	0.0	0.0	0.0	0.0
Viet Nam	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	0.0	0.0	0.0	0.0	0.0	0.0
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0
% Value of imports						
China	0.0	0.2	0.1	0.0	0.0	0.1
India	0.0	0.1	0.1	0.4	0.3	0.2
Iran	0.0	0.0	0.0	1.8	0.0	0.5
Brazil	0.0	0.0	7.5	1.2	0.0	1.1
Sri Lanka	3.0	0.1	0.1	0.4	3.7	1.5
Myanmar	0.0	0.0	0.1	51.4	0.0	2.5
Hong Kong, China	0.0	54.8	1.2	0.0	0.0	4.3
Viet Nam	0.2	0.0	0.0	0.0	0.1	0.0
Thailand	0.0	0.0	0.0	0.0	0.0	0.0
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0

Table 1.31. *Value of Australian rejections of herb and spice imports*

Country	2006	2007	2008	2009	2010	Total 2003-10
Absolute value (US$ million)						
India	0.1	0.1	0.1	0.1	0.1	0.6
China	0.1	0.1	0.0	0.1	0.0	0.5
Papua New Guinea	0.0	0.0	0.2	0.0	0.0	0.5
United States	0.0	0.0	0.1	0.0	0.0	0.4
Sri Lanka	0.0	0.0	0.0	0.0	0.1	0.1
Indonesia	0.0	0.0	0.0	0.0	0.0	0.1
Republic of Korea	0.0	0.0	0.0	0.0	0.0	0.1
Chile	0.1	0.0	0.0	0.0	0.0	0.1
South Africa	0.0	0.0	0.0	0.1	0.0	0.1
Viet Nam	0.0	0.0	0.1	0.0	0.0	0.1
% Value of imports						
India	0.9	1.1	0.7	0.7	0.4	0.7
China	2.0	1.1	0.3	1.6	0.4	1.1
Papua New Guinea	0.0	0.0	24.3	0.0	0.0	4.2
United States	1.3	0.0	4.7	0.6	0.0	1.9
Sri Lanka	0.1	0.7	0.0	0.0	4.8	1.8
Indonesia	0.0	0.0	1.2	0.0	0.0	0.5
Republic of Korea	1.6	12.7	0.0	4.5	3.8	5.2
Chile	16.1	2.1	0.0	0.0	0.0	2.6
South Africa	0.1	0.1	0.2	5.7	0.2	1.2
Viet Nam	0.0	0.1	2.5	0.0	0.0	0.7

Nuts and seeds and their products

In the case of nuts and seeds and their products, the most substantive losses due to import rejections were observed in the EU (table 1.32). Most notably, Iran incurred losses amounting to US$190 million over the period 2004 to 2010, accounting for 14 per cent of the value of trade. It is noteworthy, however, that the value of EU rejections of imports from Iran has declined appreciably over time, from almost US$70 million in 2005 to US$8 million in 2009 and US$10 million in 2010. While the United States and Turkey had accumulated losses valued at US$57 million and US$47 million, respectively, these accounted for only 0.6 per cent of the value of imports over this period. Indeed, the only other countries for which EU rejections of nuts and seeds and their products accounted for a significant proportion of the value of imports were Ukraine (8.2%), Egypt (2.5%) and to a lesser extent South Africa (1.5%) and Brazil (1.1%).

The value of import rejections of nuts and seeds and products was minimal in the United States, Japan and Australia (tables 1.33 to 1.35). For example, while China had some of the largest losses among exporters of nuts and seeds and products to the United States and Japan, these typically amounted to less than US$5 million annually, accounting for no more than 0.5 per cent of the value of trade. For some countries with lower levels of imports, however, the losses due to rejections of nuts and seeds and products accounted for a significant proportion of the value of exportss. For example, the losses incurred by Sri Lanka over the period 2003 to 2010 averaged 36 per cent of the value of its exports to Australia while Indonesia and Hong Kong (China) incurred losses of almost 23 per cent over the same period.

Table 1.32. *Value of EU rejections of nut and seed and product imports*

Country	2006	2007	2008	2009	2010	Total 2004-10
Absolute value (US$ million)						
Iran	28.0	16.8	24.0	7.5	10.1	189.0
United States	7.4	15.4	10.4	14.0	3.5	57.4
Turkey	8.9	12.2	8.1	5.8	2.0	47.3
China	1.8	2.5	7.2	2.2	3.4	20.0
Ukraine	0.1	0.1	0.1	0.7	13.5	14.9
Argentina	1.0	0.6	1.1	2.1	2.5	8.2
India	0.1	0.6	1.0	1.2	2.4	7.0
Brazil	1.1	0.3	0.8	0.8	0.9	5.3
South Africa	0.5	0.4	0.3	0.5	1.3	3.3
Egypt	0.3	0.3	0.8	0.7	0.2	2.8
% Value of imports						
Iran	14.6	8.2	12.8	5.0	5.6	14.2
United States	0.5	1.0	0.7	1.0	0.2	0.6
Turkey	0.7	1.0	0.6	0.6	0.2	0.6
China	0.7	0.8	1.8	0.9	1.3	1.0
Ukraine	0.5	0.3	0.2	4.4	56.0	8.2
Argentina	0.4	0.2	0.3	0.6	0.7	0.4
India	0.1	0.2	0.4	0.5	1.2	0.4
Brazil	2.0	0.5	1.0	1.0	1.2	1.1
South Africa	1.9	1.3	1.0	1.6	2.6	1.5
Egypt	2.3	1.5	3.8	5.1	1.8	2.6

Table 1.33. *Value of US rejections of nut and seed and product imports*

Country	2006	2007	2008	2009	2010	Total 2002-10
Absolute value (US$ million)						
India	0.8	0.1	0.1	0.3	1.2	3.7
China	0.4	0.0	0.0	0.5	0.1	2.5
Mexico	0.4	0.2	0.3	0.2	0.0	2.1
Iran	0.1	0.1	0.0	0.0	0.1	0.5
Tanzania	0.0	0.0	0.0	0.0	0.5	0.5
Guatemala	0.0	0.0	0.0	0.5	0.0	0.5
Brazil	0.0	0.0	0.0	0.1	0.0	0.5
Lebanon	0.1	0.0	0.0	0.0	0.0	0.3
Viet Nam	0.0	0.0	0.0	0.0	0.1	0.3
Turkey	0.0	0.1	0.0	0.0	0.0	0.2
% Value of imports						
India	0.0	0.1	0.2	0.6	0.2	0.1
China	0.4	0.0	0.0	0.4	0.1	0.3
Mexico	0.1	0.1	0.1	0.0	0.1	0.2
Iran	3.6	0.0	0.0	4.4	5.2	5.2
Tanzania	0.0	0.0	0.0	10.0	1.1	0.0
Guatemala	0.0	0.0	4.0	0.0	0.7	0.0
Brazil	0.0	0.0	0.1	0.0	0.0	0.0
Lebanon	0.8	0.0	0.0	0.0	0.7	1.0
Viet Nam	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	0.4	0.0	0.0	0.0	0.1	0.2

Table 1.34. *Value of Japanese rejections of nut and seed and product imports*

Country	2006	2007	2008	2009	2010	Total 2006-10
Absolute value (US$ million)						
China	1.1	1.0	1.5	0.6	0.8	5.0
India	0.1	0.0	2.4	0.9	1.1	4.4
Guatemala	0.0	0.2	0.3	0.0	0.0	0.5
Viet Nam	0.3	0.2	0.0	0.0	0.0	0.5
Paraguay	0.2	0.0	0.2	0.0	0.0	0.4
South Africa	0.1	0.1	0.2	0.0	0.0	0.3
Iran	0.0	0.1	0.0	0.0	0.0	0.2
Turkey	0.0	0.0	0.1	0.0	0.0	0.1
Argentina		0.0	0.0	0.0	0.0	0.1
Indonesia	0.0	0.0	0.0	0.0	0.0	0.1
% Value of imports						
China	0.4	0.5	0.7	0.3	0.3	0.4
India	0.4	0.0	6.6	2.9	2.8	3.0
Guatemala	0.0	32.3	39.9	0.0	0.0	10.0
Viet Nam	9.7	7.3	0.0	0.0	0.0	2.3
Paraguay	32.9	0.0	16.6	2.2	28.7	12.3
South Africa	0.5	0.6	1.0	0.4	0.1	0.5
Iran	0.0	5.4	1.4	0.9	0.2	1.5
Turkey	0.8	0.0	1.7	0.0	0.0	0.5
Argentina		0.0	5.9	0.0	2.9	2.3
Indonesia	0.0	7.5	2.7	0.4	12.3	5.2

Note: Blank cells reflect zero imports.

Table 1.35. *Value of Australian rejections of nut and seed and product imports*

Country	2006	2007	2008	2009	2010	Total 2003-10
Absolute value (US$ million)						
China	0.7	0.7	1.2	0.2	0.2	4.0
United States	0.4	0.0	0.2	0.0	0.1	1.0
Sri Lanka	0.0	0.0	0.0	0.0	0.3	0.7
Canada	0.7	0.0				0.7
Argentina	0.0	0.0	0.0	0.0	0.0	0.6
Philippines	0.0		0.2	0.1	0.0	0.4
Iran	0.1	0.1	0.0	0.0	0.0	0.3
Thailand		0.2	0.2	0.0		0.3
Indonesia	0.1	0.0	0.0	0.0	0.0	0.2
Hong Kong, China	0.0	0.0	0.0	0.1	0.0	0.2
% Value of imports						
China	4.1	3.4	4.9	1.0	0.7	2.7
United States	0.0	0.0	0.0	0.7	0.0	0.9
Sri Lanka	0.0	14.3	0.0	2.1	88.8	36.2
Canada	6.6	3.3	0.8	0.5	1.0	1.5
Argentina	2.6	0.0	0.0	0.0	0.1	0.4
Philippines	6.9	0.0	23.5	71.2	1.4	14.0
Iran	7.0		0.0	0.0	3.9	5.1
Thailand	2.2	0.0	0.0	0.0	0.0	0.4
Indonesia	30.8	0.0	33.6	1.3	57.6	22.9
Hong Kong, China	11.1	0.0	32.6	0.0	57.8	14.1

Note: Blank cells reflect zero imports.

Table 1.36. Value of losses due to rejections of agrifood product imports from Thailand, 2002–2010

Product	Unit	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
European Union											
Fish and fishery products	US$ (million)	—	—	0.06	0.21	0.73	0.23	0.53	0.65	0.16	2.57
	%	—	—	0.01	0.04	0.10	0.03	0.05	0.06	0.01	0.04
Fruit and vegetables and products	US$ (million)	—	—	0.01	0.02	0.01	0.04	0.02	0.07	0.07	0.23
	%	—	—	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01
Herbs and spices	US$ (million)	—	—	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.02
	%	—	—	0.00	0.03	0.01	0.00	0.00	0.04	0.01	0.01
Nuts and seeds and products	US$ (million)	—	—	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.04
	%	—	—	0.29	0.00	0.15	0.04	0.05	0.16	0.00	0.09
United States											
Fish and fishery products	US$ (million)	2.78	2.12	2.47	2.71	1.78	2.67	2.77	2.02	1.15	20.46
	%	0.20	0.14	0.17	0.17	0.09	0.14	0.13	0.10	0.05	0.13
Fruit and vegetables and products	US$ (million)	4.67	5.43	0.40	6.13	0.93	0.28	0.17	0.16	0.10	18.27
	%	2.23	2.06	0.12	1.90	0.26	0.08	0.04	0.04	0.02	0.57
Herbs and spices	US$ (million)	0.00	0.00	0.01	0.03	0.01	0.00	0.01	0.02	0.02	0.11
	%	0.06	0.07	0.12	0.51	0.19	0.06	0.11	0.27	0.21	0.18
Nuts and seeds and products	US$ (million)	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.03
	%	0.01	0.08	0.03	0.00	0.00	0.01	0.00	0.02	0.00	0.01
Japan											
Fish and fishery products	US$ (million)	—	—	—	—	0.47	0.59	0.64	0.58	0.54	2.82
	%	—	—	—	—	0.05	0.06	0.06	0.05	0.04	0.05
Fruit and vegetables and products	US$ (million)	—	—	—	—	0.04	0.11	0.11	0.11	0.08	0.45
	%	—	—	—	—	0.02	0.05	0.05	0.04	0.03	0.04
Herbs and spices	US$ (million)	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.01
	%	—	—	—	—	0.01	0.01	0.01	0.00	0.00	0.01
Nuts and seeds and products	US$ (million)	—	—	—	—	0.00	0.00	0.00	0.00	0.01	0.01
	%	—	—	—	—	0.00	0.00	0.00	0.00	0.21	0.05
Australia											
Fi Fish and fishery products	US$ (million)	—	0.16	0.13	0.41	0.17	0.25	0.06	0.17	0.33	1.67
	%	—	0.10	0.08	0.21	0.08	0.10	0.02	0.06	0.11	0.09
Fruit and vegetables and products	US$ (million)	—	0.02	0.04	0.34	0.03	0.01	0.05	0.10	0.06	0.65
	%	—	0.08	0.15	1.19	0.10	0.02	0.10	0.22	0.11	0.21
Herbs and spices	US$ (million)	—	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
	%	—	0.00	0.00	0.14	0.09	0.06	0.43	0.07	0.00	0.08
Nuts and seeds and products	US$ (million)	—	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.3
	%	—	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.4

Estimates of the absolute and relative losses due to import rejections of agrifood products can also be undertaken at the individual country level, in order to assess the overall magnitude of losses due to non-compliance with food safety and other requirements in international trade, and to identify patterns and trends over time and across export markets and product categories. The case of Thailand is presented as illustration.

Table 1.36 reports the absolute and relative value of import rejections faced by Thailand in Australia, the EU, Japan and the United States. Across all of these markets, fish and fishery products have recorded the largest losses, most notably in the United States. Thus, US rejections over the period 2002 to 2010 were valued at US$20 million, but accounted for only 0.13 per cent of the value of its fishery imports from Thailand over this

period. Rejections in the EU, Japan and Australia were typically less than US$0.5 million annually and accounted for 0.5 per cent or less of the value of imports in the case of the EU and Japan, and 0.1 per cent in the case of Australia.

US rejections of fruit and vegetable and product imports from Thailand over the period 2002 to 2010 were also significant, amounting to US$18 million and accounting for almost 0.6 per cent of the value of imports (table 1.36). However, the value of rejections declined appreciably over time, from a high of US$6 million in 2005 to US$0.1 million in 2010. Rejections in the EU, Japan and Australia amounted to less than US$1 million over the entire periods under examination.

The value of herb and spice and nut and seed rejections were minimal in all four markets, being valued at much less than US$1 million over the periods under examination, and typically accounting for less than 0.2 per cent of the value of imports.

The results presented above, alongside those in the TSCR 2010 report, illustrate the scope for using import rejection data to estimate the economic losses resulting from the value of rejected product consignments. Clearly, it is important to be mindful of the potential biases in these estimates, but in the absence of alternative and better data they do reveal the broad magnitude of losses and how these vary across exporting countries, destination markets and agrifood products.

The broad message from the results presented above is that the economic losses associated with import rejections are small, and indeed often insignificant as a proportion of the value of trade. At the same time, particular instances of appreciable losses are observed, either where significant and persistent compliance problems occur (for example with exports of nuts and seeds and products from Iran to the EU) and/or where compliance problems are faced by small or medium-scale exporters and sizeable consignments are rejected (for example with exports of herbs and spices from Papua New Guinea to Australia). However, the more common scenario is where even persistent compliance problems resulting in multiple rejections and even quite sizeable losses in absolute terms are "drowned out" by the sheer size of trade (for example, as with exports of fruit and vegetables from Turkey to the EU).

In interpreting these estimates of the costs associated with import rejections, it is important to recognize that they represent the "tip of the iceberg" in terms of the economic losses associated with the problems faced by developing countries in complying with food safety and other requirements in export markets. Thus, far more significant is the fact that compliance issues can harm the reputation of the exporting country as a supplier of agrifood products or specific commodities or even curtail exports altogether, whether because market access is restricted (e.g. by import bans) or because exporters are perturbed by the risks of facing a rejection. While estimates of these losses are not available here, it is likely that they are many magnitudes greater than the very visible costs of rejected consignments.

2 Corporate Buyers' Compliance Confidence Survey as a 2nd Measure of Trade Standards Compliance Capacity

2.1. Introduction

The overall purpose of the TSCR is to provide in-depth assessments of the compliance challenges facing developing countries when they export food products to international markets. The analysis of agrifood product import rejections presented in the TSCR 2010 and updated in chapter 1 provides only a partial picture. Official import rejections are the result of actions by public authorities based on judgements about compliance with official regulations. However, exporters of food also need to satisfy the needs of private buyers in export markets. Importing companies also have requirements with respect to food quality and safety.

In order to provide a more comprehensive picture of the compliance challenges faced by developing countries, the present TSCR provides an additional layer of analysis. This chapter presents the results of a survey among corporate buyers in selected industrialized country markets, including those covered by the analysis of import rejection data reported above. The survey findings provide insights on both compliance challenges and the compliance capacity of selected developing countries.

One of the key objectives of this corporate buyers' compliance confidence survey ("buyer survey") is to capture the perspective and perceptions of importing/buying companies and to get insights into their sourcing decisions and their buying experience. Among other things, the survey serves to identify the reasons why buyers/importers decide to source or not source their supply from specific developing countries. A particular focus is on (public and private) quality and safety standards and the role that compliance with such standards plays in companies' sourcing decisions.

A related purpose of the survey is to get importing/buying companies' assessment of the compliance capacity of a number of selected developing countries from which they source or had sourced food products. Broadly speaking, respondents were asked to assess various dimensions of the compliance capacity of the sample countries and to rate their confidence in the quality infrastructure and related (e.g. testing) services that exist on the ground.

In fact, the survey was conducted among two different target groups: corporate buyers of fresh fruit and vegetables on the one hand, and importers of fish and fishery products on the other hand. The survey results show how importing companies evaluate the capacity and performance of selected developing countries to comply with buyer requirements and quality/safety standards for fresh fruit, vegetables and fishery products.

Based on this evaluation, the survey gives a detailed picture of the strengths and weaknesses of individual countries and also identifies good performers and supplier countries. This can be used to identify key areas where suppliers to global buyers should improve their compliance capacity with (public and private) standards. This will also facilitate the identification of priorities for technical/development assistance to these countries. Overall, the corporate buyers' compliance confidence survey has to be understood as part of UNIDO's efforts to understand and identify the specific trade capacity-building needs of developing countries.

To this end, the buyer survey, as mentioned, elicits the assessments of export market buyers with respect to the capacity of particular developing countries (and exporters therein) to comply with buyer requirements. The rationale behind this approach is that buyers who have actually imported from a particular country will have direct experience of that country's compliance performance and compliance infrastructure and will, thus, be in a position to make informed judgements about that country's compliance capacity. Thus, for each country in our sample the survey results allow to obtain the following three measures of compliance capacity:

- **Official controls and buyer requirements**: How important are official food safety controls compared to other buyer requirements, and how do respondents (i.e. buying/importing companies) rate country performance on food safety controls?
- **Compliance outcomes**: Rates of rejection of product consignments by buyers and instances where imports from a country have been curtailed altogether due to non-compliance with food safety and/or quality requirements.
- **Confidence in the local compliance infrastructure**: How do buyers rate local laboratory infrastructure, and is it important in buying decisions?

This chapter reports the results from a pilot buyer survey for each of these three measures. After providing some details on the survey implementation, the chapter presents the findings of the survey among corporate buyers of, first, fresh fruit and vegetables and, second, fish and fishery products before concluding with a discussion of the differences between corporate buyers selling to supermarkets and buyers selling to other customers and markets.

2.2. Details of the survey

A two-pronged survey was undertaken for this chapter, one among importers of fresh fruit and vegetables and one among importers of fish and fishery products. As respondents, companies in key industrialized country markets—including the European Union (EU), United States (US), Japan, Australia and Canada—were targeted. These included importers, food retailers, food manufacturers, wholesalers and traders. More specifically, the survey elicited the views of buyers who had direct experiences of importing from particular developing countries, either because they currently imported or had done so in the last 5 years. The survey undertaken for this TSCR should be understood as "work in progress" and the findings reported here are the results of a pilot application for a rather small country sample comprising the members of the Economic Community of West African States (ECOWAS) plus Mauritania (as an important country of West Africa but not an ECOWAS member) and South Africa (as a benchmark country).

For the implementation of the survey, an online questionnaire was established. Potential respondents were identified through trade directories and membership lists of trade and industry organizations. To facilitate distribution of the survey, UNIDO approached various industry associations, asking them to make their members aware of the survey and to encourage them to participate.[17] An invitation to participate in the survey was sent by email over the period February to April 2012. This email included a link to an online survey platform. After periods of five and then seven days, reminders were sent by email to non-respondents.

A total of 780 export market buyers of fresh fruit and vegetables were invited to participate in the survey, of which 159 (20 per cent) provided valid responses. The respondents were mainly from the UK, Germany, Netherlands, France and the United States. Among the ECOWAS countries, only six were cited by a substantial number of respondents as being a current supplier or recent supplier (where they have sourced from during the last five years). These were Burkina Faso (with 25 responses), Côte d'Ivoire (44), Ghana (44), Mali (25), Senegal (35) and South Africa (65). The results presented below focus on these countries where sufficient data were collected to provide valid measures.

In the case of the survey of export market buyers of fish and fishery products, 1,540 companies were invited to participate in the survey. A total of 196 valid responses were obtained. The respondents were mainly from the UK, Germany, Netherlands, Spain and the United States. Only three of the countries covered by the survey were identified by respondents as significant sources of supply of fish and fishery products over the last five years, namely South Africa (38), Senegal (24) and Nigeria (20). In fact, fish and fishery product exports from all other countries were very limited so that the responses collected on these countries did not allow for a meaningful analysis.

2.3. Results of fresh fruit and vegetables buyer survey

Official controls and buyer requirements

How important are food safety, official controls and the compliance infrastructure within the broader range of factors that influence decisions that corporate buyers take about whether to source from one country or another? Survey participants were presented with a list of 14 factors relating to product safety, quality, cost, delivery and the overall economic and political circumstances of the country. For each, they indicated its importance in making sourcing decisions on a seven-point scale from "very unimportant" (1) to "very important" (7). The average score for each of the factors is reported in figure 2.1, with factors for which differences in the average score were statistically insignificant having the same color bar. As figure 2.1 shows, the buyers ranked consistency of quality and ability to meet quality requirements as the most important decision criteria. These were followed by consistency of supply, traceability and the strength of food safety controls within the supply chain. In contrast, the strength of food safety regulations in the (potential) supplier country was among the least important factors influencing the sourcing decisions of buyers, while the strength of the trade-related infrastructure was ranked number 9 of the 14 factors. Overall, then, official controls and capacity were among the least important factors influencing buyers' sourcing decisions.

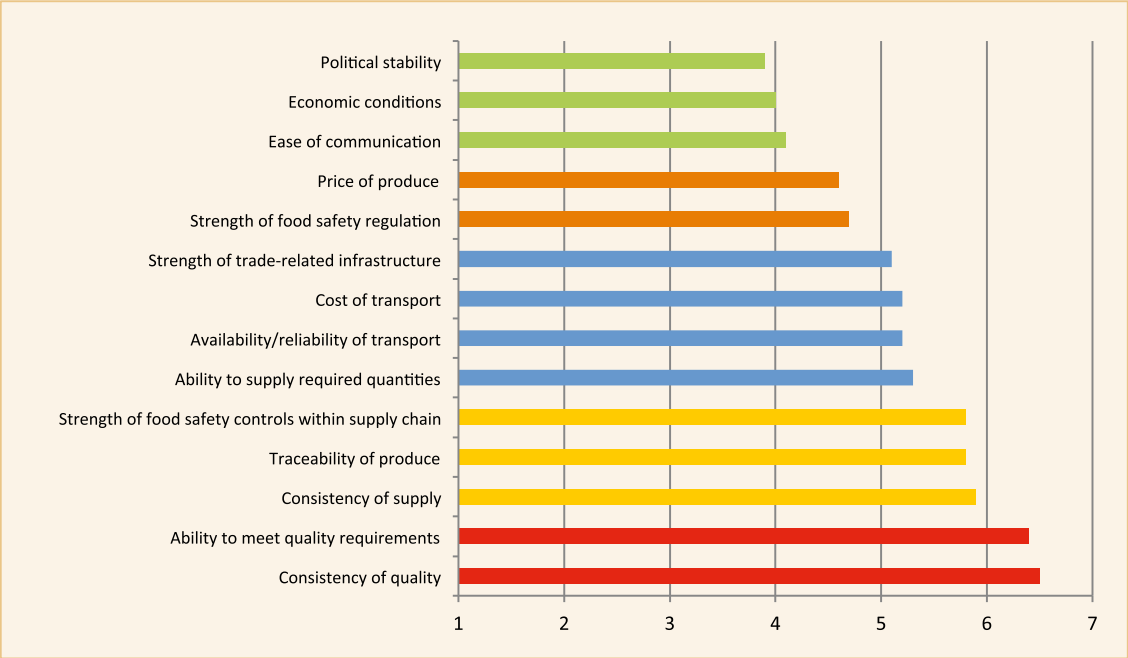
Of course, the main interest here is in the performance of the six countries (for which a meaningful number of responses was provided) with respect to each of the 14 factors (table 2.1). South Africa was judged the best performer on every item. Among the ECOWAS countries, Ghana was ranked best on the factors assessed as most important in figure 2.1. It was ranked second to South Africa in four of the five most important factors. The poorest performer was Burkina Faso. It was ranked last on 9 of the 14 factors, and last in four of the five most important factors. The differences between Mali, Senegal and Côte d'Ivoire were small.

These results give a broad picture of how corporate buyers in key export markets perceived the food safety and quality compliance capacity of the six focal countries in the analysis, together with other factors driving their choice over where to source fresh fruit and vegetables. Given the focus of the TSCR, however, it is important to examine in more detail where the performance of these countries in terms of food safety and quality compliance capacity is good or bad.

In addition to the overall ranking of country and value chain performance, the respondents to the survey were, therefore, also asked to judge the performance of the six countries with respect

17 The support of the following organizations is gratefully acknowledged: BOGK (Bundesverband der obst-, gemüse- u. kartoffelverarbeitenden Industrie, Germany), BRC (British Retail Consortium, UK), CSIF (Chambre Syndicale des Importateurs Français de fruits et légumes frais, France), Danish Chambers of Commerce, DFHV (Deutsche Fruchthandelsverband e.V., Germany), Finnish Grocery Trade Association, Finnpartnership (Finnish Business Partnership Programme), Freshfel Europe (European Fresh Produce Association), Fresh Produce Consortium (UK), Fresh Trade Belgium, Frugi Venta (Netherlands Platform of Fruit and Vegetable Traders), SFCA (Swiss Convenience Food Association), SIPPO (Swiss Import Promotion Programme), Hovedorganisasjonen Virke (Federation of Norwegian Enterprises), and WKO (Austrian Economic Chambers).

Figure 2.1. *Importance of factors in choosing countries as source of fresh fruit and vegetables*



Note: 1 = "very unimportant"; 7 = "very important". Bars of the same color are not statistically different at the 5 per cent level.

Table 2.1. *Mean performance scores for factors driving where to source fresh fruit and vegetables*

Factor	Burkina Faso	Côte d'Ivoire	Ghana	Mali	Senegal	South Africa
Political stability	5.0	2.1	5.5	6.0	4.8	6.1
Economic conditions	2.2	2.7	4.7	5.0	4.8	5.6
Ease of communication	4.0	4.0	5.1	5.3	3.6	6.5
Price of produce	4.6	4.2	4.8	4.3	4.7	4.8
Strength of food safety regulation	3.6	3.8	4.1	4.2	3.7	5.8
Strength of trade-related infrastructure (e.g. cold chains)	3.6	3.9	4.6	5.5	4.2	6.4
Cost of transport	2.8	3.6	4.2	4.5	4.0	5.2
Availability/reliability of transport	2.4	4.1	4.9	5.5	4.2	6.2
Ability to supply required quantities	4.4	4.3	4.6	5.0	5.3	6.2
Strength of food safety controls within supply chain	3.3	4.4	4.8	4.2	3.8	6.3
Traceability of produce	3.9	4.9	5.6	3.7	5.1	6.3
Consistency of supply	3.6	4.1	4.6	4.0	5.2	6.3
Ability to meet quality requirements	3.4	4.5	5.1	5.0	4.5	6.5
Consistency of quality	4.0	4.5	5.1	4.3	4.7	6.5
Sample size	25	44	44	25	35	65

Note: 1 = "very weak"; 7 = "very strong".

to nine elements relating specifically to food safety and quality controls (table 2.2). It turns out that the country rankings are the same as for table 2.1. Across the nine dimensions, South Africa was judged to have the best performance, scoring an average of 6.0 out of a maximum of 7, Ghana ranked second, and Burkina Faso was rated lowest among the six countries. There was wide variation, however, in the judgements of respondents regarding the performance in the various elements of food safety and quality controls in each country, and for performance across the ECOWAS region as a whole. Particularly low scores (average of 2.7 across the five ECOWAS countries covered) were given for the quality of laboratory testing services, and substantially higher scores for traceability through the supply chain and food safety and quality practices (4.6 and 4.3, respectively).

Table 2.2. Mean scores for strength of food safety and quality assurance systems as they relate to fresh fruit and vegetables

Element	Burkina Faso	Côte d'Ivoire	Ghana	Mali	Senegal	Five ECOWAS countries [a]	South Africa
Food safety/quality legal framework	3.4	3.9	4.6	4.1	3.5	3.9	5.7
Enforcement of food safety/quality regulations	3.0	3.7	3.9	3.7	3.7	3.6	6.0
Food safety/quality practices in production	3.2	4.4	4.5	4.0	3.8	4.0	6.6
Food safety/quality practices in post-harvest handling/processing	3.4	4.7	5.2	4.2	4.0	4.3	6.2
Traceability through supply chain	4.0	4.7	5.5	3.7	5.0	4.6	6.2
Laboratory testing services	2.7	2.7	2.6	2.7	2.8	2.7	5.5
Product certification services	2.8	3.9	4.1	4.0	3.1	3.6	5.8
Inspection services	3.0	3.8	3.6	4.0	3.0	3.5	5.7
System/enterprise certification services	2.5	3.6	3.6	3.0	3.2	3.2	5.9
Unweighted mean score for all nine factors	3.1	3.9	4.2	3.7	3.6	3.7	6.0
Number of respondents	25	44	44	25	35	—	65

Note: 1 = "very weak"; 7 = "very strong". [a] Unweighted mean scores for the five countries.

Compliance outcomes

The survey also included two measures of food safety and quality compliance performance. Note that, in contrast to the measures of compliance capacity presented in the previous section which were based on the *judgements and perceptions* of corporate buyers of fresh fruit and vegetables, these measures aim to capture the *actual experiences and actions* of respondents with respect to instances of non-compliance, as follows:

- **Exclusion rate**: The proportion of respondents that had imported from a country in the last five years but had stopped specifically because of non-compliance with food safety and quality requirements.
- **Rejection rate**: Average proportion of fresh fruit and vegetables imported from the country concerned that was rejected because of non-compliance with food safety and quality requirements in the most recent year where purchases occurred.

Figure 2.2 reports the exclusion rate for the six focal countries in the analysis. South Africa had the lowest rate at around 5 per cent; that is, among respondents to the survey, 5 per cent of companies that had previously sourced from South Africa no longer imported from that country due to non-compliance with food safety and quality requirements. At the other extreme, 16 per cent of respondents had ceased imports from Burkina Faso due to non-compliance with food safety and quality requirements.

Burkina Faso also stands out as having a very high rejection rate, with 60 per cent of buyers rejecting over 10 per cent of the volume purchased, and a further 20 per cent of buyers rejecting nine to 10 per cent (figure 2.3). In contrast, almost 80 per cent of buyers of South African produce rejected less than 3 per cent of the volume purchased. These results match the scoring of the strength of food safety and quality assurance systems in the sample countries reported above.

Confidence in local compliance infrastructure

The final issue addressed by the buyer survey concerned the degree of confidence of respondents in the local laboratory testing infrastructure. Is this an issue for corporate buyers and what are the indications that a good local laboratory infrastructure increases the confidence of buying companies? Specifically:

1. Do buyers accept testing results from in-country laboratories?
2. Do buyers undertake their own laboratory tests to verify the safety and/or quality of imports?
3. Do buyers undertake additional visits to countries to verify food safety and quality controls?

For acceptance of in-country laboratories, the survey asked about the degree of acceptance of public and private laboratories that were, or were not, internationally accredited. The first important and clear result was that foreign buyers of fresh fruit and vegetables were often willing to accept testing results from local laboratories, but only if these laboratories were internationally accredited. Laboratories without international accreditation have no value for buyers. Among accredited laboratories, there was little difference in the acceptability of public and private laboratories. The second—and somewhat striking—result from the survey was that buyers purchasing produce from

Figure 2.2. *Rate of exclusion of focal countries as a source of fresh fruit and vegetables*

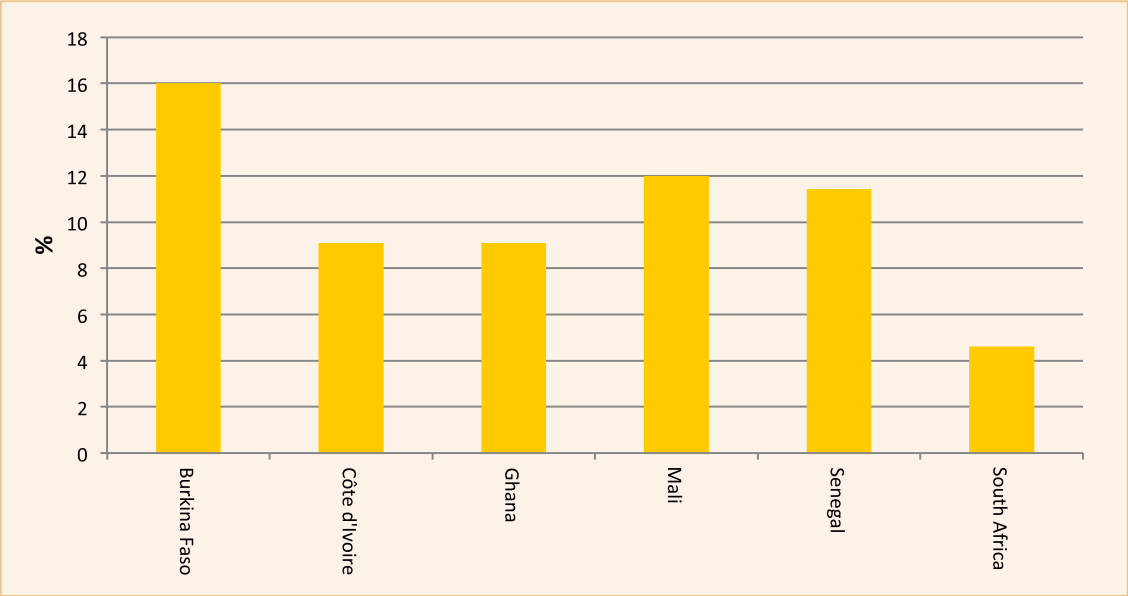
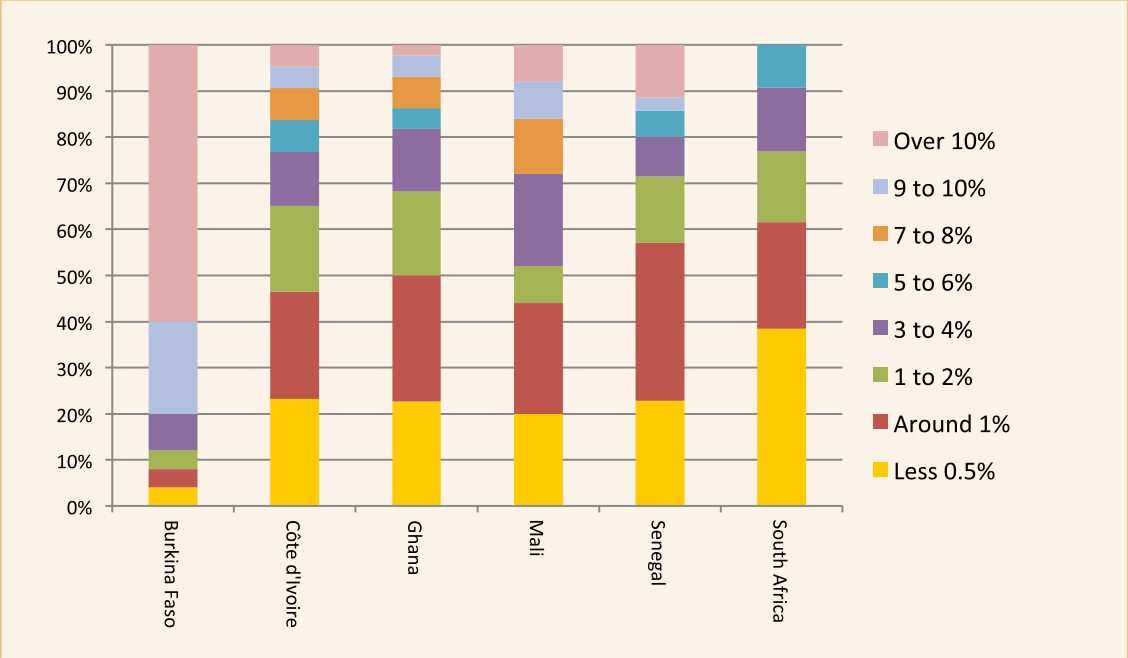


Figure 2.3. *Rejection rates for fresh fruit and vegetables for focal countries*



the two countries with the best rated compliance performance, Ghana and South Africa, were *less* likely to accept testing results from internationally accredited local laboratories than buyers sourcing from other countries. This suggests greater stringency on the part of buyers from these countries, and this issue will be explored further in section 2.5.

Irrespective of the degree of acceptance of local laboratory testing results, the vast majority of respondents undertook their own laboratory tests (figure 2.4). Of respondents importing from South Africa, 91 per cent indicated that they undertook their own tests to verify food safety and/or quality. Mali was the only country in which the percentage of respondents undertaking their own tests fell below 80 per cent. South Africa was the only country in which a share of these tests was conducted locally.

Figure 2.4. *Proportion of respondents undertaking own tests to verify safety and/or quality of fresh fruit and vegetables*

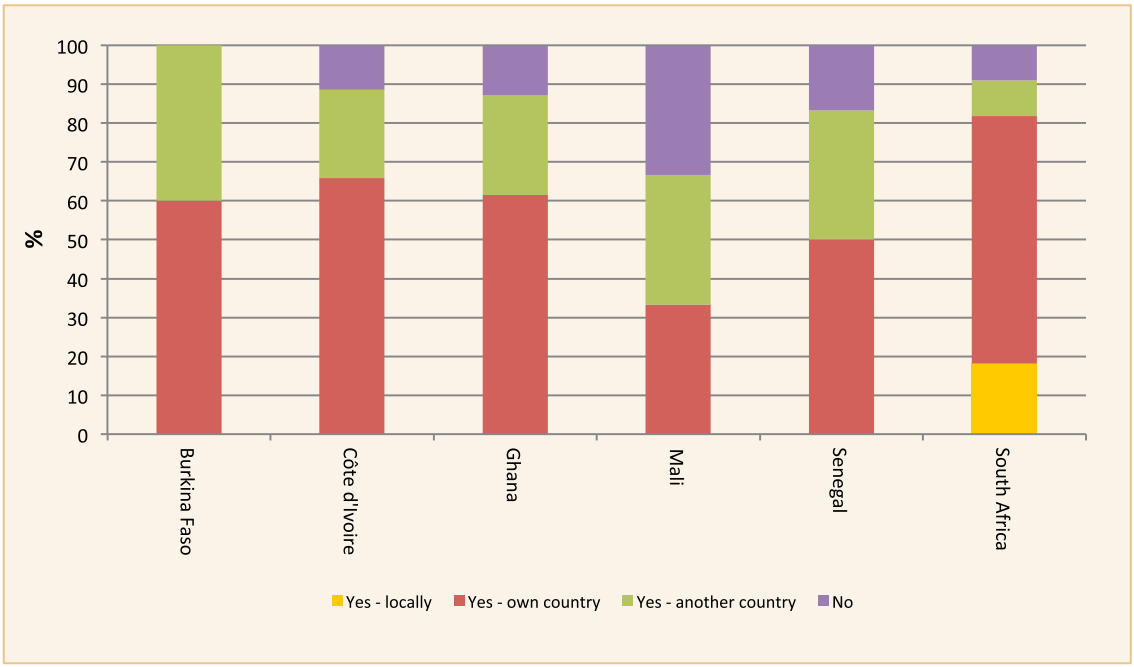
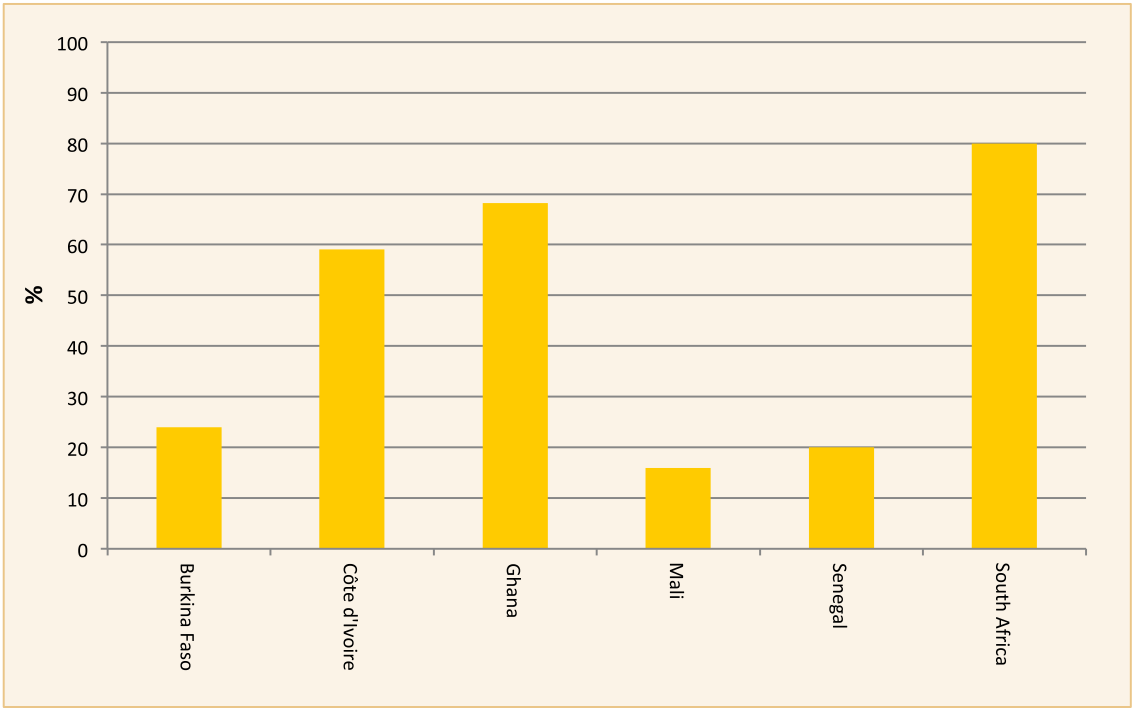


Figure 2.5. *Proportion of respondents undertaking visits to check on food safety and/or quality controls for fresh fruit and vegetables*



Complementing these tests, buying companies also conducted their own visits to check on local food safety and quality controls. These were most common in South Africa (80 per cent) and Ghana (68 per cent). Conversely, less than 25 per cent of respondents that sourced from Burkino Faso, Mali and Senegal indicated that they undertook such visits (see figure 2.5). This is perhaps somewhat surprising: respondents are most likely to undertake verification visits in the case of countries that they judge to have the strongest food safety and quality controls. This result, and the findings on confidence in local laboratories, suggests that buyers from Ghana and South Africa are applying more stringent requirements than buyers from other supplier countries covered by the survey (see section 2.5).

2.4. Results of fish and fishery products buyer survey

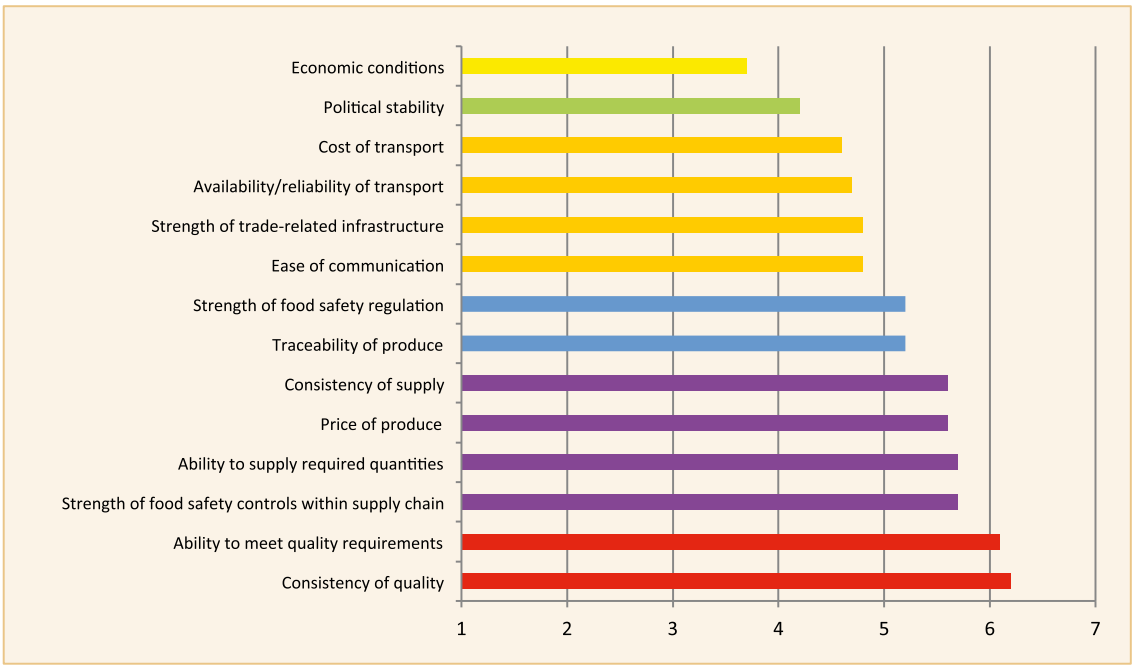
The fish and fishery products survey focuses on three countries: Nigeria and Senegal in West Africa, and South Africa as a comparator. For the other countries in our sample, an insufficient number of corporate buyers of these products from the region were found among respondents so that the data collected was not sufficient for a meaningful analysis.

Official controls and buyer requirements

The buyers of fish and fishery products were presented with the same list of factors that might influence their decisions about whether to buy from one country or another. The results are shown in figure 2.6. Overall, the ranking of priorities is similar to that in figure 2.1 which showed the rating of buyers of fresh fruit and vegetables. The six most important factors registered in figure 2.1 appear in the top seven factors in figure 2.6. Quality and consistency of quality continue to be the most important decision criteria, followed by the strength of the food safety controls in the supply chain, meeting quantity requirements, price, consistency of supply, and traceability. In this list, the one new factor entering the top ranking is price. This may reflect that fishery products are less differentiated than fresh vegetables and easier to source from a wider range of suppliers and intermediaries. The other main difference between the two categories of buyers is the lower ranking for the two factors relating to transport—cost and availability/reliability. Once again, this may reflect the particular characteristics of fresh produce, which often needs rapid and reliable transport systems to take it to market.

Looking at how respondents evaluate the performance of individual countries with regard to these sourcing decision criteria reveals that, as with fresh fruit and vegetables, South Africa outperforms the West African countries by a considerable margin, as shown in table 2.3. The corporate buyers' assessments of the performance of Nigeria and Senegal are very similar, but South Africa is rated substantially better in most factors. The only factors in which South Africa is not rated more highly are price of produce and cost of transport. As was noted above, these factors are more important for fish and fish products than is the case for fresh fruit and vegetables.

Figure 2.6. *Importance of factors in choosing countries as source of fish and fishery products*



Note: 1 = "very unimportant"; 7 = "very important". Bars of the same color are not statistically different at the 5 per cent level.

Table 2.3. Mean performance scores for factors driving where to source fish and fishery products

Factor	Nigeria	Senegal	South Africa
Political stability	4.9	5.0	6.3
Economic conditions	4.5	4.9	5.4
Ease of communication	5.5	5.7	6.7
Price of produce	5.6	5.5	4.3
Strength of food safety regulation	4.2	4.3	6.0
Strength of trade-related infrastructure (eg. cold chains)	5.5	5.7	6.6
Cost of transport	5.9	6.3	4.9
Availability/reliability of transport	5.4	5.5	6.5
Ability to supply required quantities	5.9	6.2	6.6
Strength of food safety controls within supply chain	5.3	5.4	6.5
Traceability of produce	4.8	5.0	6.0
Consistency of supply	5.6	5.8	6.5
Ability to meet quality requirements	5.4	5.5	6.7
Consistency of quality	5.3	5.4	6.6
Sample size	20	24	38

Note: 1 = "very weak"; 7 = "very strong".

Table 2.4. Mean scores for strength of food safety and quality assurance systems as they relate to fish and fishery products

Element	Nigeria	Senegal	South Africa
Food safety/quality legal framework	4.7	4.9	6.2
Enforcement of food safety/quality regulations	4.0	4.2	5.9
Food safety/quality practices in post-harvest/capture handling/processing	5.1	5.3	6.6
Traceability through supply chain	4.7	4.8	6.1
Laboratory testing services	4.9	4.8	6.5
Product certification services	4.9	4.7	6.1
Inspection services	5.3	5.5	6.5
System/enterprise certification services	5.6	5.3	6.4
Unweighted mean score for all eight factors	4.9	4.96	6.3
Number of respondents	20	24	38

Note: 1 = "very weak"; 7 = "very strong".

Looking in more detail at the buyers' evaluations of food safety and quality compliance capacities of the three countries, a similar ranking of performance across the three countries is evident (table 2.4). South Africa is rated more highly on all eight factors,[18] with Nigeria and Senegal ranked very closely together. The biggest gaps in performance between South Africa and the other two countries relate to enforcement of food safety and quality regulations, laboratory testing services, traceability, and the food safety/quality legal framework. These are fundamental characteristics of safety and quality assurance systems.

Compliance outcomes

The buyers of fish and fishery products were also asked about the exclusion rates and rejection rates for each supplier country (for an explanation, see section 3.2). In both cases, the rates were lower than seen for fresh fruit and vegetables. In particular the exclusion rates for Senegal and Nigeria were approximately the same level as for South Africa and substantially lower than all the West African countries in the case of fresh fruit and vegetables (see figure 2.7 and, for comparison, figure 2.2).

18 Because of the different nature of fisheries (particularly capture fisheries) compared to fresh fruit and vegetables, the question about food safety/quality practices in production was omitted in the case of fish product buyers.

Figure 2.7. *Rate of exclusion of focal countries as a source of fish and fishery products*

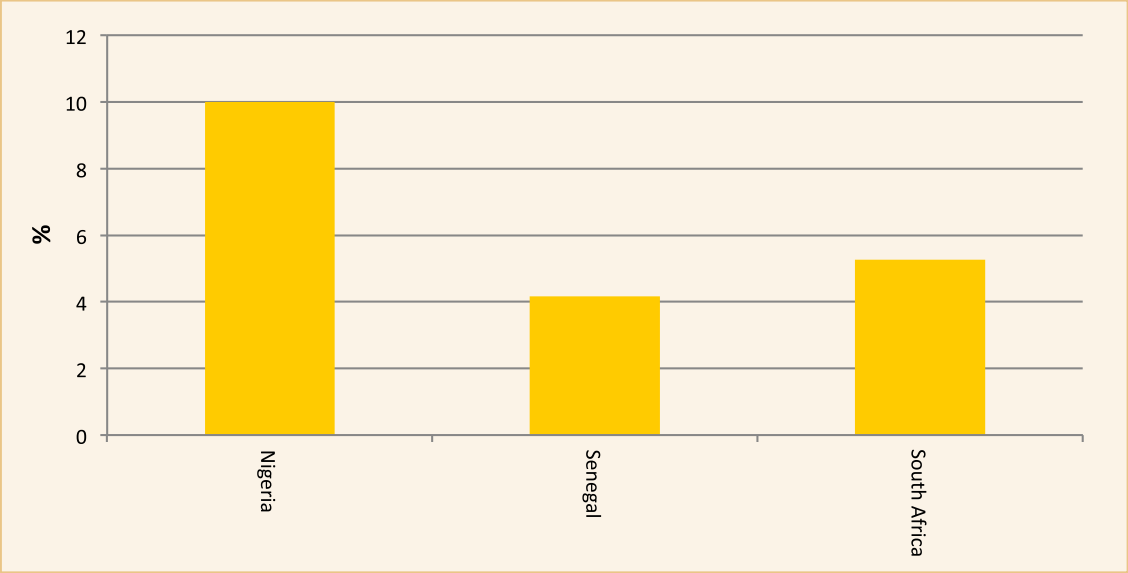
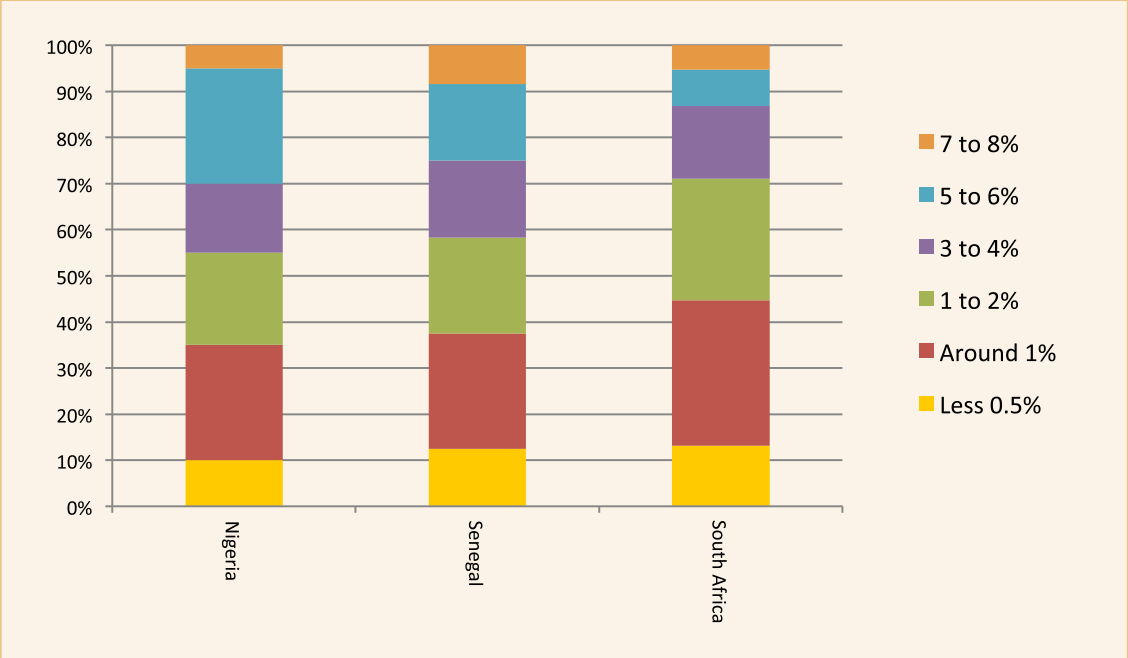


Figure 2.8. *Rejection rate for fish and fishery products for focal countries*

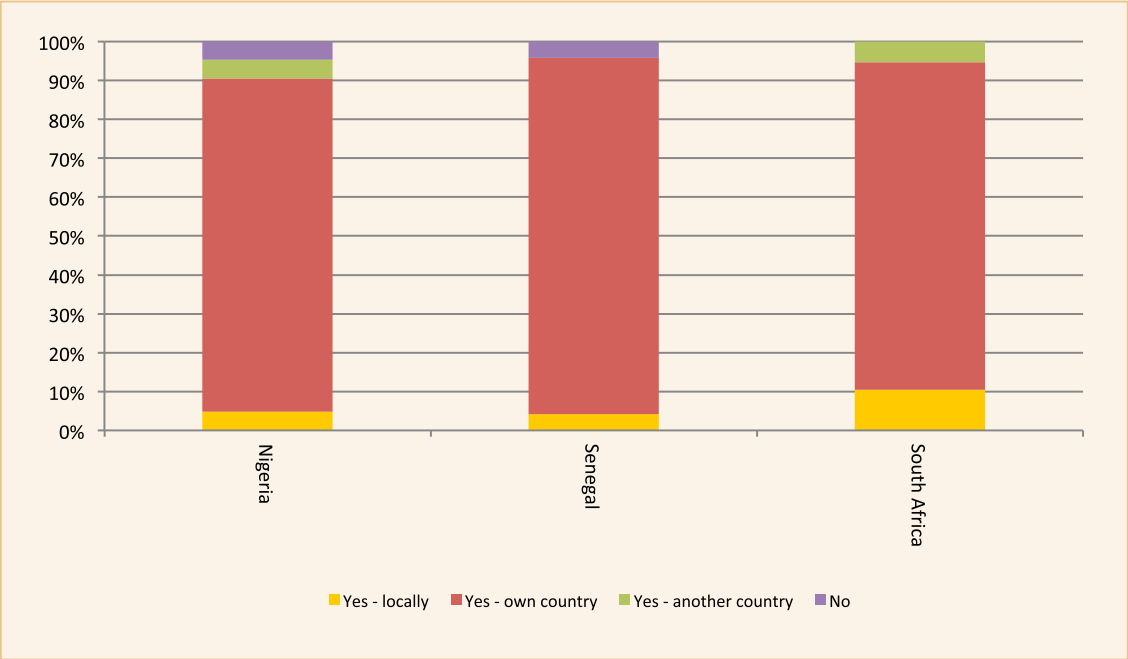


With respect to rejection rates by buyers, South Africa is rated better than the other two countries, although the difference is not so pronounced as in the case of fresh fruit and vegetables. Overall, the rejection rate in Nigeria is highest, with 30 per cent of buyers reporting rejection rates above 5 per cent. In Senegal, the equivalent rate is 25 per cent of buyers, and in South Africa just under 15 per cent of buyers (figure 2.8).

Confidence in local compliance infrastructure

Finally, the corporate buyers of fish and fishery products were asked about the local laboratory testing infrastructure and their confidence in it. The first questions related to laboratories are whether buyers demand international accreditation of laboratories, and whether they prefer public or private laboratories. The buyers were fully (100 per cent) willing to accept the results from

Figure 2.9. *Proportion of respondents undertaking own tests to verify safety and/or quality of fish and fishery products*



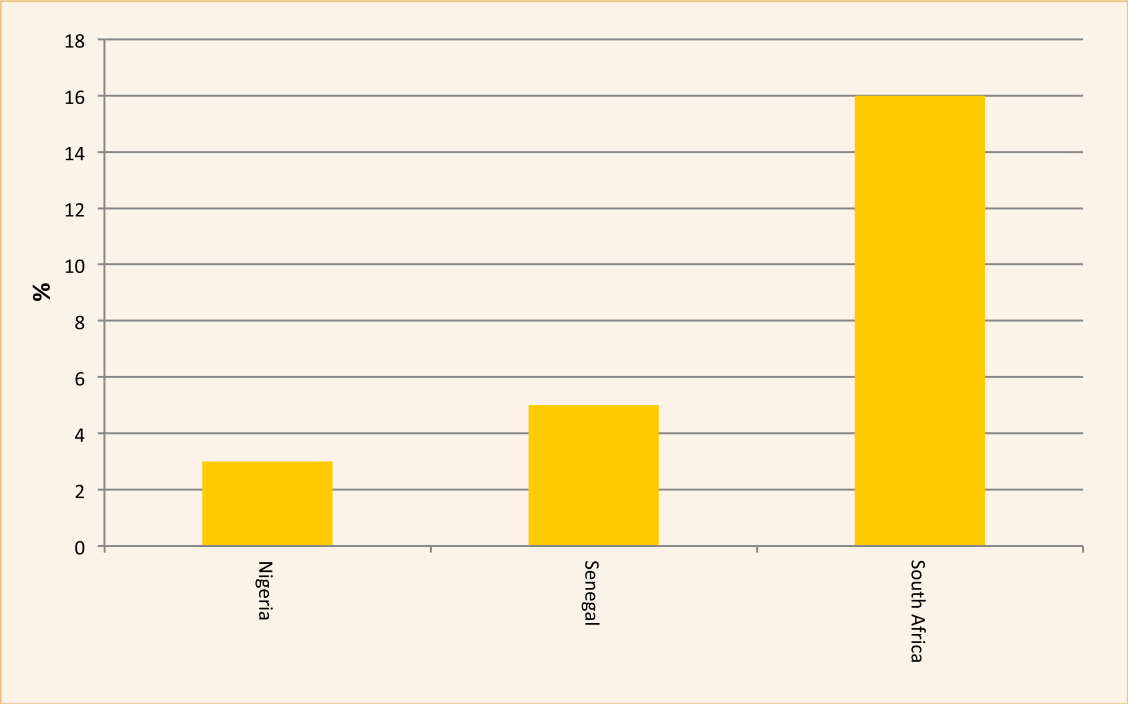
internationally accredited laboratories, be they publicly or privately owned. Laboratories that were not internationally accredited were acceptable to a minority of buyers, more so in South Africa (34 per cent for both public and private laboratories) and substantially less so for Senegal (21 per cent for private and 12 per cent for public) and Nigeria (10 per cent acceptability for both).

As can be seen in figure 2.9, almost all buyers undertook their own tests, and 85–90 per cent of these tests took place in laboratories in the buyers' home countries. In all three countries, some local testing took place, but this was very limited, even in South Africa, where 10 per cent of buyers reported using local facilities. Clearly, whatever the availability of local testing facilities, these were not utilized by foreign fish buying companies.

Finally, foreign corporate buyers complemented testing by conducting visits to check on food safety or quality controls for fish and fishery products. The level of these visits was much lower than observed in most of the countries in the case of fresh fruit and vegetables. Only 16 per cent of fish buyers importing from South Africa made such visits, compared to 80 per cent of fruit and vegetable buyers sourcing from that country. However, as for fresh fruit and vegetables, these visits are more common in South Africa than in other countries. Less than 5 per cent of buyers make visits to Senegal and Nigeria. Visits are positively correlated with overall performance on safety and quality assurance systems. One possible reason for this is the difference in the composition or characteristics of buyers that source from different countries, and this is discussed further in section 2.5. Michida et al. found a similar effect in the chemicals manufacturing sector in Malaysia. Buyer rejection rates were higher for foreign-invested firms than for other companies, even though they had taken more steps to meet chemical regulations. They hypothesised that this was because these foreign-invested companies were supplying more discriminating buyers that have high standards (2014:17-18)[19].

19 Etsuyo Michida, Yasushi Ueki and Kaoru Nabeshima (2014). „Impact of product-related environmental regulations in Asia: Descriptive statistics from a survey of firms in Penang, Malaysia". IDE Discussion Paper 457, Tokyo: Institute of Developing Economies.

Figure 2.10. *Proportion of respondents undertaking visits to check on food safety and/or quality controls for fish and fisheries products*



2.5. Case study—different types of buyers for fresh fruit and vegetables

It has been shown that buyers in South Africa and Ghana are more likely to complement testing results with visits to check food safety and quality controls on the ground, and just as likely as buyers from other countries to conduct their own food testing. This is in spite of the greater degree of confidence in the food safety systems of these countries that respondents expressed (see section 2.3 above). It might be expected that buyers would invest more in testing and visits for countries where the national food safety and quality infrastructure is weakest. Why was this not the case?

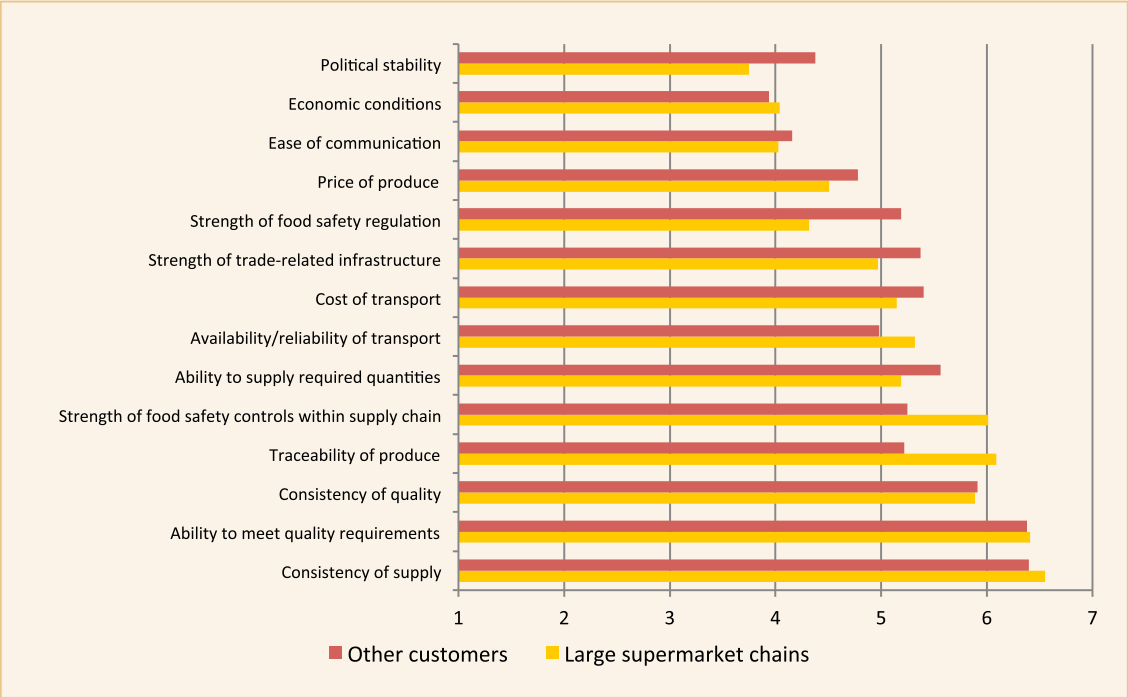
One possible explanation for this unexpected finding is that corporate buyers sourcing from the countries with the best quality and compliance infrastructure are able to supply more demanding consumers that require additional assurances about the quality and safety of produce. Supermarkets in northern Europe are particularly associated with such demands relating to the quality of fresh fruit and vegetables. This hypothesis is confirmed by survey results. The proportion of buyers supplying supermarket chains is much higher in South Africa and Ghana, which have the best compliance infrastructure. The rank order-

Table 2.5. *Proportion of respondents supplying large supermarket chains*

Source country	Percentage of respondents supplying large supermarket chains	Rank order in terms of the proportion of respondents supplying supermarkets	Rank order in terms of mean scores for strength of food safety and quality assurance systems*
South Africa	85	1	1
Ghana	79	2	2
Côte d'Ivoire	61	3	3
Senegal	43	4	5
Mali	28	5	4
Burkina Faso	24	6	6

* From table 2.2 above.

Figure 2.11. Importance of factors in choosing countries as source of fresh fruit and vegetables by main customer type



Note: 1 = "very unimportant"; 7 = "very important".

ing in table 2.5 (in terms of proportion of respondents supplying to supermarkets) closely matches the ranking of mean scores for the strength of food safety and quality assurance systems in table 2.2.

Given the stricter food safety and quality requirements of supermarkets, the relatively well regarded food safety and quality controls in South Africa (in particular) and Ghana are complemented by additional buyer controls. Conversely, export market buyers sourcing from countries such as Burkina Faso, Mali and Senegal are much more likely to be supplying other types of customer with less strict food safety and quality requirements.

The differences between large supermarket chains and other customers were explored in two ways. First, the ranking of factors determining which countries to source from was compared across the two types of buyers. As figure 2.11 shows, it was found that respondents whose main customers were *not* major supermarket chains put much greater importance on the strength of food safety regulations in the countries from which they source, also gave greater importance to price, the cost of transport, and the trade-related infrastructure. Conversely, suppliers of major supermarket chains assign greater importance than other buyers to the strength of food safety controls within supply chains (which is the predominant focus of private food safety standards) and traceability, which is an integral part of food safety management.[20] There was no significant difference in the importance of consistency of quality and the ability to meet quality requirements between respondents mainly supplying large supermarket chains as opposed to those mainly serving other types of customers.

Second, for buyers that sell to large supermarket chains, certification to private standards is an important strategy for ensuring conformance with the food safety requirements of the importing countries. There are many private standards, some of which are listed in figure 2.12. There is considerable overlap between them, with the main difference between one standard and another relating to the point at which the standard is applied: pre-farmgate, post-farmgate (particularly food processing establishments), or both. The results show that the requirements for the pre-farmgate GlobalGAP standard differentiate the two types of buyers. All the buyers whose main customers are large supermarket chains required all or most of their suppliers to be certified to GlobalGAP, compared to only 70 per cent of buyers who mainly supplied to other types of customers. For other standards, the differences were much less marked. Supermarket customers were more likely to require IFS and ISO 22000, but less likely to require Dutch HACCP, which is more extensively used by other segments in the food market, such as caterers. The buyers' requirements are expressed in private controls as well as public.

20 All of these differences were significant at the 5 per cent level.

Figure 2.12. *Proportion of respondents for which main customers require fresh fruit and vegetables supplied to be certified to particular standards by main customer type*

2.6. Conclusions

The survey among corporate buyers of fresh produce and fish and fishery products provides an indication of those factors that are most important for buyers when they make choices about which countries to source from. Among the most important factors are those that relate to supply chain performance, particularly issues relating to safety, quality, traceability and consistency of supply. The strength of the food safety compliance infrastructure is ranked highly among the factors that determine not only the choice of country, but also how suppliers succeed in retaining their position within the buyers' supply chains. Poor performance will lead to fewer buyers choosing to source from a particular country, and an increased likelihood that the buying relationship will be terminated in a given period.

Countries wishing to expand their export markets clearly need to improve the quality of their compliance infrastructure. However, it is less clear what steps need to be taken in this direction. The corporate buyers indicate a range of factors that determine country choice. The most important ones—quality, consistency of supply, traceability and food safety controls in the supply chain—may be determined by enterprise-level competences rather than the broader, public and private compliance infrastructure. In other words, meeting the requirements of buyers requires public-private collaboration and the development of business competences as much as it needs investment in the public compliance infrastructure.

The results show clear differences in the capabilities of different countries in the ECOWAS region and also a substantial gap between the capabilities of even the best performers in this region compared to South Africa. The countries that are rated less favorably have a long way to catch up. Nevertheless, even these countries have export opportunities. The results of the survey show that the hierarchy of buyer priorities varies between products: cost and price are more important for fish and fishery products than for fresh fruit and vegetables. The hierarchy of priorities also differs between different types of buyers. While not explored in the survey, it is also clear that certain destination markets have different types of buyers, with large supermarket chains commanding larger market shares for fresh produce and fish in northern Europe than in Southern or Eastern Europe, for example. Therefore, export development strategies need to match country-level capabilities (or even enterprise-level capabilities) with the differing demands from different markets, products and types of buyers.

It is important to recognize, however, that the results presented above come from the first application of the buyer survey instrument. Moving forward, the aim is both to refine this instrument and the approach to data collection, and to expand the remit of the survey to countries in other regions and across a wider range of agrifood products. Thus, while the survey produced informative results that serve to demonstrate the compliance capacity of countries in the ECOWAS region, most notably relative to a key regional comparator in the form of South Africa, they should be regarded as preliminary.

3. Measures of Trade Standards Compliance Capacity Indices as a 3rd Measure of Trade Standards Compliance Capacity

3.1. Introduction

While the analysis of import rejection data and the buyer survey aim to assess the compliance performance of developing countries, specifically in the areas of food safety and quality, the focus of the Trade Standards Compliance Capacity Indices (TSCCI) is on the ability of countries to perform the key functions needed for compliance with technical regulations and standards in trade more generally. Thus, the focus is on the overarching policy and regulatory framework, ability to promulgate standards and technical regulations, and the status of metrology, testing, inspection, certification and accreditation services. In other words, the purpose of the TSCCI is to serve as an innovative analytical tool to assess and measure the capacity of a country's quality infrastructure and related services with a specific focus on its relevance for the country's participation in international trade. In so doing, the TSCCI aims to complement other indicators of trade performance, for example the World Trade Indicators (WTI),[21] Logistics Performance Index[22] and Doing Business indicators[23] of the World Bank. At the same time, it also seeks to complement the import rejection analysis undertaken in this report. In fact, the TSCCI provides another perspective on developing countries' compliance challenges and it can help to undertake a capacity gap analysis that can facilitate the identification of the main underlying reasons for import rejections.

The basic structure and data collection and analysis approach of the TSCCI is outlined in the 2010 Trade Standards Compliance Report (UNIDO 2011). A critical characteristic of the TSCCI is that it aims to provide measures of *relative* capacity to perform the key functions underlying trade standards compliance. The rationale behind this is that the trade competitiveness of a particular country is reflective of how its trade compliance capacity compares to its key export market competitors. Further, it is instructive (e.g. for benchmarking purposes) to examine the capacity of developing countries relative to other countries at a similar level of development and/or in the same region. In so doing, the aim is to highlight specific areas of strength and weakness in trade standards compliance capacity, such that the TSCCI consists of a suite of 10 indices, each of which corresponds to a particular area of capacity.

This chapter presents new and updated estimates of trade standards compliance capacity that reflect the lessons learnt from the development and pilot application of the TSCCI concept as reported in the TSCR 2010 (UNIDO 2011). For example, in addition to covering "horizontal" (i.e. generic, cross-cutting or non-sector-specific) dimensions of a country's quality and compliance infrastructure, it was decided to add a "vertical" (or sector-specific) component to the TSCCI by including a separate index on food safety compliance capacity. This serves to strengthen the focus on the agrifood sector which is of particular interest here, and also makes closer the link between the TSCCI and the import rejection analysis (another integral part of the TSCR series) which is also focused on the agrifood sector. Thus, the choice of indicators of capacity and the related survey instrument have been revised,[24] and a more intensive process of data collection has been employed to improve the reliability of the data. This has enabled results for 49 named countries to be reported. Importantly, reflecting the nature of the index, the results present the status of capacity across ten areas of trade standards compliance for countries *relative to one another* rather than a fixed benchmark.

3.2. Quality infrastructure and compliance services

In the present environment of increased globalization, standardization in its broader sense[25] plays an ever growing role in technological progress, quality improvement, productivity and trade. Purchasers in developed, as well as developing economies, demand products and services that meet rigorous and advanced requirements for performance, safety, health and quality. The reasons are manifold, but three stand out: (1) products

21 http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:22421950~pagePK:148956~piPK:216618~theSitePK:239071,00.html

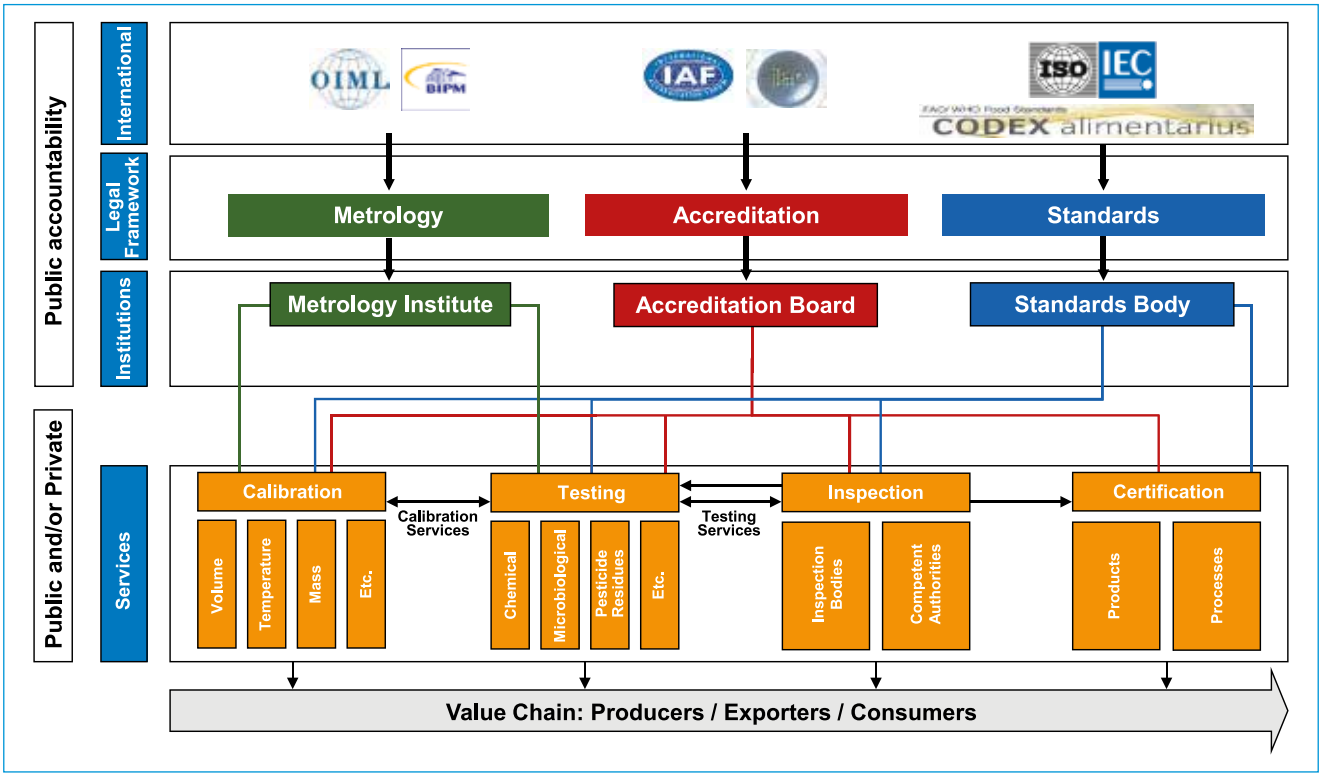
22 http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTLF/0,,contentMDK:21514122~menuPK:3875957~pagePK:210058~piPK:210062~theSitePK:515434,00.html

23 http://www.doingbusiness.org/

24 Martin Kellermann was the lead expert in this exercise and for the establishment of the survey questionnaire. In addition, UNIDO gratefully acknowledges reflections, inputs and suggestions provided by a number of international experts in the area of quality infrastructure development, namely M. Bourassa, GMS de Silva, A. El-Tawil (who also provided the French version of the questionnaire), J. Gilmour, I. Goulding, F. Hengstberger, A. Rowley, U. Samarajeewa, Mr. Sohrab, Rajinder Raj Sud, G.M. Tewari, and G. Theisz.

25 Standardization as defined in *ISO/IEC Guide 2: 2004, Standardization and related activities—General vocabulary* is the activity of establishing, with regard to actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context.

Figure 3.1. Scheme of quality infrastructure and its building blocks



Source: UNIDO

and services must satisfy customer expectations, (2) products and services must comply with the growing requirements of technical regulations in importing countries, and (3) products have to interconnect seamlessly with others in supply chains that span the globe.

Whether the requirements for products and services are contained in contractual arrangements or are defined in voluntary standards or mandatory technical regulations, compliance has to be demonstrated to the satisfaction of the purchasers and/or the regulatory authorities. Conformity assessment and compliance evidence is provided by inspection organizations, test laboratories, and system and product certification organizations as independent third parties not connected to either the supplier or the purchaser. These compliance service providers may be in the public or private sector, but they have to demonstrate their technical competence to be taken seriously. This in turn requires a proper metrology system to ensure the validity of measurements, and accreditation which is the preferred way of demonstrating technical competence.

The totality of the institutional framework (public or private) required to establish and implement standardization, metrology (scientific, industrial and legal), accreditation and conformity assessment (inspection, testing and certification) services—which are necessary to provide acceptable evidence that products and services meet defined requirements as demanded by authorities (i.e. technical regulation) or the market place (i.e. contractually or inferred)—is generally known as the Quality Infrastructure.[26] A graphic illustration of the Quality Infrastructure elements and their interrelationships is shown in figure 3.1—including linkages to the international system. Whereas this infrastructure may have been established over decades in developed economies and is well-developed, this is not the case in many developing economies where parts of the Quality Infrastructure may be less developed or may not be present at all.

This chapter of the TSCR covers 10 dimensions of (or related to) a country's quality infrastructure and trade standards compliance capacity which will be expressed in 10 TSCC Indices. The following sections offer an explanation and description of the key functions and services within these ten areas of the quality and compliance infrastructure that our survey and analysis focuses on. This will also serve to motivate and provide a rationale for the choice of indicators for capacity/performance that were used in the different areas to compute the TSCCI.

26 In the past various acronyms such as SMTQ, MSTQ, SQAM and others were used to denote various system combinations of the institutions responsible for Metrology, Standardization, Accreditation, Testing and Quality. All these acronyms are gradually being replaced by the more encompassing Quality Infrastructure concept.

Quality Policy / Legislative Framework

The individual elements of the Quality Infrastructure can operate on their own, but the efficacy of each and their integration into a holistic whole without any conflicts of interest (e.g. accreditation and conformity assessment in one organization) is necessary to ensure that reliable and credible compliance services are provided. If any of the elements of the Quality Infrastructure are absent or weak, the whole system may be jeopardized. This could mean that international recognition will be difficult to obtain, or the country may struggle to establish Mutual Recognition Arrangements (MRAs) with key trading partners (An and Maskus 2009). It may then be necessary for exporters to seek compliance services elsewhere, at higher cost and much longer lead times. Or products are quarantined on importation, awaiting inspection and testing which leads to all sorts of problems and additional transactional costs.

A Quality Policy secures a holistic approach for governments, especially in developing economies, to have policy guidance for the development of their quality infrastructure and services. Many governments in developing economies are pushing industrial development and trade to foster socioeconomic development and poverty reduction. Such governments have expounded a VISION 2020 or similar for the country, expressing its desire to become a middle-income country by that time, for example. They have various export and industrial development policies, food safety or security policies, environmental policies and in some cases even science and/or technology policies in place. All of these policies consistently touch on standardization, technical regulation or SPS measures in some way.

These policies, however, are seldom coordinated in respect of standardization or technical regulation. There has therefore been a growing tendency for governments to promulgate a Quality Policy that establishes the quality infrastructure organizations and their responsibilities, as well as international recognition and other relevant issues, thereby coordinating the objectives of the many other policies in this regard. If a country is serious about regulatory reform, the technical regulation regime is also dealt within the Quality Policy as it is firmly interwoven with the quality infrastructure. In developed economies, a Quality Policy is seldom to be found, as the systems are mature, internationally recognized, and generally not in need of further policy guidance.

The Legislative Framework formalizes the set-up of quality infrastructure and services in a country. An analysis of the legal status of the ISO membership shows that the bulk of national standards bodies are government or statutory organizations. Anecdotal evidence suggests that the same is true of metrology institutes and accreditation bodies. All of these require legislative instruments of some kind for their establishment, responsibilities, governance, finances, activities and the like. The problem is that in many developing economies this legislation dates back 30 years or more, some even to earlier colonial times. Given the extreme effort and time required to revise such legislation in developing economies, many organizations are loath to embark on this journey and try and muddle through with out-of-date and largely ineffective legislation.

It is also difficult to establish a common approach to technical regulation across various ministries if the appropriate legislative instruments are not in place, e.g. the New Approach and Global Approach in the EU that were initiated by the Directive 83/189/EEC, since then amended and expanded numerous times. Hence, one specific outcome of the implementation of a Quality Policy should in fact be the review of all quality infrastructure related legislation.

Standardization

A **National Standards Body (NSB)** is responsible for the development, approval and publication of national standards. Frequently these standards are the basis of technical regulation in the country (see section 2.3). In order to foster trade, to keep its stakeholders informed and to influence international or regional standards where it matters to industry, the NSB should actively participate in the development of these. The mandate of the NSB should include:

- Establish and maintain an open and transparent consensus-based system of standards development through technical committees representative of all stakeholders that could also act as "national mirror committees" for international or regional standardization work.
- Establish and maintain an up-to-date standards information system that can provide national (i.e. own as well as those of main trading partners), regional and international standards to authorities, industry and society. The standards information system should not only be based on printed material, but increasingly have an efficient IT basis.
- Represent the country in notable international standardization organizations such as the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the Codex Alimentarius Commission.
- Represent the country in relevant regional standardization organizations.
- Create awareness at enterprise and public sector level of the necessity of standardization, and the compliance to standards as the basis for trade, inspection, testing and certification, and technical regulation.

In many developing economies the NSB would also be one of the prime conformity assessment service providers because inspection, testing and certification activities are all based on standards and the NSB is seen as a center of technical excellence in this regard. In some economies the NSB will also allow other Standard Development Organizations (SDOs) to develop national standards, but good practice indicates that the publication thereof should remain in the hands of only the NSB.

Technical regulations

From the perspective of the supplier, compliance with standards is a voluntary activity. Compliance may be a contractual requirement or a market preference, but non-compliance is not illegal

per se. On the other hand, technical regulations which frequently look very much like standards, have to be complied with by law—non-compliance is illegal. Technical regulations are typically imposed to safeguard the health and safety of the population, fauna and flora, and the environment and to deter major consumer scams. Hence, technical regulations are potentially a bigger trade restriction than standards. Therefore the WTO TBT Agreement endeavors to guide development and implementation of technical regulations in a way that they do not become unnecessary trade barriers. Standards are developed by a consensus process open to all stakeholders, whereas technical regulations, which are the sole responsibility of governments, frequently are imposed unilaterally.

In most countries more than one ministry is responsible for the development and implementation of technical regulations. Over the years, these different ministries have developed their own ways and means for doing so, and overlaps, gaps and major differences in approach have developed. Such divergence places a burden on suppliers and adds significantly to transaction costs. Regulatory reform, also dealing with technical regulations, has been on the agenda for more than a decade within the Organization for Economic Cooperation and Development (OECD). In many developing economies, such reforms have also become necessary as these countries endeavor to enhance their trade and export performance.

The reform of the technical regulation regime typically encompasses: (1) The development and implementation of a common approach to technical regulation that has to be followed by all ministries and their agencies, (2) a review of all technical regulations on the statute books against the common approach and their subsequent amendment, revision, re-affirmation or even withdrawal, (3) the establishment of a technical regulation oversight office charged with the responsibility to coordinate technical regulation development and implementation, and (4) to ensure that the country meets its obligations in terms of the WTO TBT Agreement (see also section 2.10).

Whereas ministries and agencies in the past were predisposed to do everything themselves, the more modern and cost-effective approach is to ensure that the Quality Infrastructure provides most of the standardization, testing and certification services underpinning technical regulation implementation. The regulatory agencies can then concentrate on market surveillance and the imposition of sanctions in the case of non-conforming products.

Metrology

A **National Metrology Institute (NMI)** is the institution designated by national decision to establish and maintain national measurement standards for measurement quantities, e.g. mass, time, volume, length, electrical parameters, chemical substances and many others. The NMI is the pinnacle metrology organization of the country responsible for the recognition of the country's metrology capabilities within the international metrology system. Normally the NMI would maintain all the national metrology standards. The NMI may, however, designate other competent organizations to establish and maintain specific measurement standards that it does not wish to maintain itself. The mandate of the NMI should include:

- Establish and maintain the national measurement standards for the relevant metrology quantities at the required accuracy level as needed by the country. The measurement standards need to be demonstrably compliant with the international definitions or traceable to the national measurement standards of more advanced countries.
- Support the development of a technically competent national calibration system, i.e. the capacity building in calibration laboratories in the public and private sector to diffuse measurement standards into industry, authorities and society.
- Represent the country at the international level, i.e. at the International Bureau of Weights and Measures (BIPM), and ensure that the Calibration and Measurement Capabilities (CMCs) of the country are peer reviewed and taken up in the international Key Comparison Data Base (KCDB) administered by the BIPM.
- Represent the country in regional metrology structures such as AFRIMET (Africa), APMP (Asia Pacific), COOMET (Euro-Asia), EUROMET (Europe), SIM (Americas), etc.
- Represent the country in relation to national metrology institutes of other countries.

In many countries the NMI also conducts the type of approval testing of measuring equipment falling within the scope of legal metrology regulations, even though the approval of such measuring equipment remains with the Legal Metrology Department (see below). Certification of suppliers to ISO 9001, ISO 14001 or ISO 22000, as well as accreditation of testing and calibration laboratories to ISO/IEC 17025 or accreditation of inspection authorities to ISO/IEC 17020 generally require traceable calibration, hence an effective and efficient NMI and calibration laboratories.

Calibration laboratories determine the metrological characteristics of a measuring instrument by comparing it with a measurement standard. Based on this information, the user (e.g. test laboratory, inspection body, manufacturer or supplier) can decide whether the instrument is fit for the application in question. The calibration laboratory utilizes a measurement standard that is traceably calibrated against the national measurement standard held by an NMI. In this way the whole traceability chain right up to the international standards is maintained, leading to accurate, consistent and trustworthy measurements that are of vital importance for the acceptance of products in international markets. Calibration laboratories may be public or private, may be in-house or independent. Their technical competency should be assured by accreditation to ISO/IEC 17025.

Legal Metrology Departments are responsible for the administration of metrology requirements enforced by law, such as the use of accurate weights and measures in trade, instrumentation utilized in health care and environmental control as well as law enforcement. The objective of legal metrology is typically to create an equitable situation as regards measurements in trade and law enforcement, and to ensure customer safety in health care. For example, the Legal Metrology Department would approve instruments for use in the market, law enforcement, health services or environmental controls. They would furthermore conduct market surveillance to ensure that legal requirements for calibration and verification of instruments or pre-packaging of

products are maintained. In many developing countries Weights and Measures Departments are probably the oldest Quality Infrastructure establishment. The trend is to expand their authority to also encompass the other areas listed above.

Accreditation

A **National Accreditation Board (NAB)** or **Regional Accreditation Board (RAB)** is responsible for providing an independent attestation of the technical competency of the other service providers in the Quality Infrastructure. Accreditation has become a vital element in establishing the credibility of the output of the Quality Infrastructure at the national as well as the international level. The NAB's or RAB's international recognition is therefore of paramount importance. The mandate of the NAB or RAB should include:

- Establish a national or regional accreditation system for calibration and testing laboratories, inspection bodies and product and system certification organizations. These could be augmented by accreditation of training institutions for personnel involved in quality system related activities.
- Represent the country (or participating countries in the case of an RAB) in the international accreditation organizations, i.e. the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF).
- Represent the country (or participating countries in the case of an RAB) in the relevant regional accreditation organizations such as AFRAC (Africa), IAAC (Americas), ARAC (Arab countries), EA (Europe), PAC (Pacific), etc.
- Facilitate the acceptance of its accredited conformity assessment service providers in the national, regional and international markets by becoming a full signatory of the mutual recognition arrangements of ILAC and IAF. Compliance with ISO/IEC 17011 is a prerequisite for such recognition.
- Create awareness at enterprise and public sector level of the necessity of accreditation as the vehicle to demonstrate technical competency of conformity assessment service providers in trade and technical regulation.

At the international level, no requirements have been formulated that only one NAB should be established in a country. However, having more than one is much more costly, international recognition has to be sought by each one independently, and it creates uncertainty in the market place. There is also an agreement among many of the NABs that they will not solicit business in other countries where a NAB has been established and enjoys international recognition.

Inspection

Inspection bodies examine a product design, product, process or installation to determine its conformity with specific requirements or, on the basis of professional judgement, with general requirements. Hence some inspection activities are aligned with testing activities, others with certification of products. In some cases it may be a stand-alone activity, especially in the case of market surveillance for technical regulation. Inspection bodies may be either public or private organizations. Regulatory authorities may establish their own inspection bodies or subcontract the work to others. A very important criterion is the independence of the inspection body, especially from the supplier of the product or service. Technical competency is demonstrated by accreditation to ISO/IEC 17020. Some private sector inspection bodies operate worldwide as a multinational commercial entity.

Testing

Testing laboratories conduct a large variety of tests on commodities and products. Testing is a technical operation to determine one or more characteristics in accordance with specified procedures. Tests may be required by the manufacturer, by regulatory authorities or purchasers. In the case of a product, its characteristics can be checked against the requirements of the contract or standard and the laboratory can make a judgement as to whether it complies or not. Some testing may relate to matters such as environmental measurements that may not be associated with a specific product, but which may still have trade implications.

Technical competency of test laboratories is demonstrated through accreditation to ISO/IEC 17025, which is frequently a prerequisite for the acceptance of their test results in markets abroad. Test laboratories can be public or private, can be in-house or independent. In developing economies, governments may have to establish test laboratories to begin with as it is only when adequate testing business has developed that the private sector will invest the vast sums required to establish proficient test laboratories.

Certification

Certification organizations certify that a system or a product/service complies with the requirements of a specified standard. **System certification** includes not only the now ubiquitous ISO 9001 (quality management) and ISO 14001 (environmental management), but also a myriad of other systems such as food safety (e.g. HACCP, ISO 22000, GlobalGAP, BRC), social accountability (e.g. SA 8000), occupational safety and health (e.g. OHSAS 18000), automotive (e.g. ISO/TS 16949), information security (e.g. ISO 27001) and many, many more. Certification organizations may be public or private. Many multinational certification bodies operate worldwide, whereas national certification bodies (typically the NSBs) operate at the national level only. System certification bodies should be accredited to ISO/IEC 17021 to demonstrate their technical competency. System certification by an accredited certification body does enjoy a certain level of worldwide recognition.

Product certification bodies operate more on the national level, and provide an indication to the market place that mark-bearing products meet specified quality standards. Product certification has not yet achieved the same level of worldwide recognition as is the case for system certification. Product certification marks are frequently owned by the "government" and utilized to foster specific industrial development policy goals. Even so, product certification bodies are increasingly pressurized to be accredited to ISO/IEC 17065 to demonstrate their technical competence. In some countries product certification may be required to demonstrate compliance with technical regulation requirements.

The number of private sector certification organizations operating in more than one country is on the increase, as consumers in developed economy markets are progressively demanding more evidence of compliance with standards in the light of recent scandals regarding child labor, environmental degradation and other socioeconomic issues.

Food safety

As the focus of the TSCR is on the agrifood sector, the analysis presented in this chapter includes a separate index on food safety compliance capacity, thereby adding a "vertical" (or sector-specific) component to the TSCCI. Food safety, and more recently food security, are very important for many developing economies. On the one hand they export food products to major markets that demand high levels of food safety; on the other hand they need to ensure adequate and safe food supplies for their own population. Food is therefore heavily regulated in many economies through compulsory food safety standards and SPS measures. Standards and regulations for food products can fall within the scope of both the WTO TBT and SPS Agreements (see next section). The two Agreements however, are mutually exclusive, i.e. a risk falling within the scope of the SPS Agreement will not be dealt with by the TBT Agreement. There are however many food products subject to regulation that would fall within the scope of both the Agreements. For example, regulations dealing with the pesticide residues in processed food would be an SPS issue, whereas the nutritional requirements for the same would be a TBT issue.

A typical modern food safety system has to take cognizance of the biological origin and inherent variability between batches of foods of the same type. Hence control over the whole process has to be given due attention and not only the imposition of mandatory food safety standards that test a few samples of the product before they hit the market. Food safety is therefore a wide-ranging issue extending beyond the scope of Quality Infrastructure development. But, Quality Infrastructure development and the food safety/security system should not be separated because much of the service provision in respect of inspection, testing and certification are common elements. Even NSBs, NMIs and NABs have important roles to play in ensuring that the whole system is based on solid technological competency.

WTO agreement related institutions

The analyses presented in this TSCR focus particularly on the *trade-related* aspects of compliance capacity. Two WTO agreements are relevant for the quality infrastructure: (1) the WTO Agreement on Technical Barriers to Trade (TBT), and (2) the WTO Agreement on Sanitary and Phytosanitary (SPS) measures. The WTO TBT Agreement covers all products, deals with standards and conformity assessment in general, and provides for technical regulations for products that are potentially deleterious to the safety and health of the population, fauna and flora and the environment, also those of agricultural origin. The SPS Agreement deals exclusively with measures imposed by governments to control specific risks to human, animal or plant life and health, e.g. biosecurity controls at international borders to keep out exotic animal and plant pests and diseases.

Both agreements require the WTO member state to establish notification authorities and national Enquiry Points to safeguard the transparency of the whole system. Any new SPS or TBT measure that a country wishes to implement has to be notified to the WTO membership well in advance so that WTO member states get a chance to provide comments. The Enquiry Points are organizations designated by their governments to provide information (i.e. on request) regarding SPS and TBT measures. The NSB of a WTO member state also has to provide the ISO/IEC Information Centre with its standards development programme once every six months, over and above ensuring that the standards development system meets the requirements of Annex 3 of the WTO TBT Agreement.

An analysis of the WTO member state information shows that the bulk of the TBT Enquiry Points are placed within the NSBs, whereas the SPS Enquiry Points are much more dispersed, with ministries responsible for agriculture, health and even NSBs sharing the load. In countries with a progressive trade attitude, the Enquiry Points do much more than just answer enquiries from other WTO member states. They analyse for example the notifications reaching the WTO Secretariat on a weekly basis and inform national stakeholders most likely affected, collect comments and objections to notified SPS and TBT measures before transmitting them to their Geneva-based WTO representatives. In short, these countries are using this WTO obligation to also protect and foster the interests of their country's public and private sector and the population in general.

3.3. Analytical approach

The TSCCI incorporate ten trade compliance capacity functions that encompass the elements of the quality and compliance infrastructure as outlined in section 3.2, as well as a "vertical" dimension of capacity relating to food safety, as follows:

- Quality policy/legislative environment
- Standardization
- Technical regulations[27]
- Metrology
- Accreditation
- Inspection
- Testing
- Certification
- Food safety
- WTO-related institutions respective to technical regulations and standards.

27 As is described below, the original intention was to incorporate a single function for technical regulations on the one hand and WTO-related institutions respective to technical regulations and standards on the other hand, but this was subsequently sub-divided into two distinct functions.

Each of these elements of functions itself consists of a number of elements or sub-capacities that cover the underlying institutional and administrative arrangements (e.g. the existence of body charged with a particular function) and specific technical capabilities (e.g. the capacity to undertake a particular test in a manner that is internationally recognized). Some of these elements are discrete (e.g. whether or not a particular law is in place), while others are continuous (e.g. the number of accredited providers of inspection services). This situation makes it difficult to derive a single and consistent measure of capacity in a specific area of trade standards compliance. To reconcile these difficulties, the TSCCI draws on experiences with asset indices that are widely used in development economics, for example to provide measures of poverty (see for example Sahn and Stifel 2003; McKenzie 2005).

The trade standards compliance capacity of a country consists of a number () of distinct functions (), where as outlined in section 3.2. Underlying each of these functions there are assets denoted . For example, underlying the standardization capacity function are the existence of an NSB, membership of international standards-setting organizations and the operation of technical committees in priority sectors. The index assigns a weight () to each of these specific assets and then aggregates the weighted variables to obtain a measure of :

The most straightforward approach to deriving such an index is to assign the same weight to each of the assets. Implicitly, however, this assumes that each of these assets is of equal importance in terms of the ability to perform a particular compliance function and/or of equivalent difficulty to put in place. Evidently this is not the case in practice. For example, it is arguably more difficult (and costly) to put in place properly functioning testing and inspection services than it is to write and adopt a national quality policy.

Here, the weights assigned to the assets underlying each of the ten compliance capacity functions are derived using principal components analysis (PCA) (Filmer and Pritchett 2001; Sahn and Stifel 2003; McKenzie 2005). The assumption is that a series of observable discrete variables can be used as indicators of an underlying (but unobservable) continuous variable, in this case the capacity in one of the specific compliance functions. More explicitly, it is assumed that there is an unobserved compliance capacity variable () for each of the compliance capacity functions but that this is observable through the existence of the underlying assets .

Performing PCA on the data acts to minimize the variance between observations in the data. The assets which vary most across observations will be given a larger weight. If all countries have invested in a particular compliance asset, that variable will be given a zero weight, given that it does not explain any variation across countries. The same applies to cases where no country has invested in a particular asset. It is recommended that the asset index is interpreted using only the first principal component (PC) given that this provides the most information about the observed variables (Filmer and Pritchett 2001; McKenzie 2005).[28]

In the PCA approach employed here, assets are represented as binary variables indicating whether the particular asset exists or not. Here, a multidimensional approach to PCA is used (Sahn and Stifel 2003; Moser and Felton 2007), whereby the principal components for each of the ten specific elements of compliance capacity outlined above are estimated separately based on the existence or not of a series of associated and observable assets. For each of these elements, the index shows the position of countries *relative* to the other countries in the analysis. In this way, each index in effect benchmarks the state of capacity in any country against the level of capacity across countries in the analysis as a whole.

3.4. Data collection

The information underlying the computation of the TSCCI was collected through a survey among national quality infrastructure institutions (while some additional data were derived through desk research). For this survey, a questionnaire was developed based on inputs received from a variety of experts in the field. Once the final questionnaire had been established in English, it was translated into French to facilitate participation by francophone countries in Africa.

In terms of geographical coverage, it was decided to expand the initial scope of the pilot survey undertaken for the TSCR 2010 (which had covered 28 countries) but—given the "work in progress" nature of this exercise—to still limit it to developing Africa and developing Asia. Thus, a total of 66 countries in sub-Saharan Africa, East Asia, South Asia and Southeast Asia were selected to participate in this survey.

In these countries, the directors (or other higher management personnel) of the national standardization bodies or the respective government structure in charge of standardization were identified as primary respondents for the survey and the questionnaire was sent to them via email in summer 2012. They were

28 The PCA estimates coefficients for each asset variable that correspond to its weight in the index. The estimated coefficient for any one asset variable is determined by how much information that variable provides about the other asset variables associated with the same compliance capacity. If one asset is correlated with other assets associated with the same compliance capacity, the coefficient is positive. Conversely, if a particular asset is not correlated with the other assets associated with the same compliance capacity, the coefficient is zero. Finally, the coefficient on a particular asset is negative if the existence of that asset suggests that few (if any) other assets associated with the same compliance capacity are likely to be present. The absolute value of the coefficient indicates that the associated asset conveys more or less information about other assets associated with the respective compliance capacity. If PCA reveals that an asset is highly correlated with other assets associated with a particular compliance capacity, it is likely that this asset is also correlated with assets associated with the same compliance capacity but for which no data are available. In this way, the derived asset index can be used as a more general measure of the status of that compliance capacity. A potential drawback of PCA, however, is that it cannot satisfactorily measure the status of a particular compliance capacity unless the measured variables are positively correlated with the associated latent variable and with each other (McKenzie 2005). This means that the associated assets must be clearly defined and that there has to be a broad array of assets to be able to distinguish between capacity levels across countries.

asked to electronically fill in the questionnaire for their country and to return the completed questionnaire to UNIDO either by email or fax. At the same time, they were requested to also seek inputs from other qualified stakeholders or experts in the country to complement the information that they themselves had available. For example, for some of the compliance functions which might not be under their own purview, they were encouraged to consult with other quality infrastructure institutions with expertise in the respective area (e.g. with the National Metrology Institute) to provide the most accurate and complete data possible.

After the initial contact was established and the first email sent out, UNIDO engaged in extensive follow-up action to ensure a high-number of replies. Taking advantage of their field presence and personal contacts, this follow-up action also involved UNIDO field offices (i.e. regional and country offices on the ground) whose cooperation was crucial for the high response rate. Of the 66 countries targeted, 49 returned (sufficiently) completed questionnaires that allowed for inclusion in the analysis presented in this chapter. Overall, the data collection extended over the period from July 2012 to January 2013.

Once the data collection was completed, the information compiled went through a process of validation and cross-checking by UNIDO staff and experts. For some questions in the questionnaire only a few countries were in a position to provide a response so in those cases where insufficient information was collected across the country sample, it was decided to drop the corresponding question and not include it in the analysis. The dataset was complemented through desk research, for example with secondary data for the capacity index on WTO-related institutions respective to technical regulations and standards being added. In a final step, wherever necessary, the responses were converted into binary values so that all the data were available as categorical variables and suitable for the PCA approach employed here.

3.5. Results for specific indices

The results for each of the ten compliance capacity functions are reported below. In each case, the specific indicators are described before presenting the measured capacity of the 49 countries covered by the analysis. Note that the results of the PCA, including the weightings assigned to each of the indicators, are reported in Annex C.

Quality policy/legislative environment

A total of eight indicators were employed to capture the assets underlying the policy and legislative environment, as follows:

- Whether a national quality policy/strategy (NQP) has been promulgated.
- Whether the NQP deals with the technical regulation regime.
- Whether necessary legislation is in place for:
  - standards
  - legal metrology
  - scientific metrology
  - accreditation
  - technical regulation framework
  - food safety.

The results of the PCA are reported in the annex. The first PC accounts for 42 per cent of the variation across the eight assets, with all assets having positive loadings.[29, 30] Of the assets, those having the greatest influence on the value of the policy/legislative environment index are legislation for standards and the existence of a NQP. Legislation for food safety has the least influence, reflecting the fact that the majority of the countries in the analysis have this in place.

The value of the policy/legislative environment index for each of the 49 countries is reported in Annex figure C.1. Mongolia, Pakistan, the Republic of Korea, Sri Lanka and Viet Nam are revealed to have the greatest level of capacity relative to all of the countries in the analysis. Countries with the weakest relative capacity are the Republic of the Congo and Timor-Leste.

Standardization

The standardization capacity index consisted of 12 indicators of the underlying assets:

- Whether a national standards body (NSB) has been established.
- Whether the NSB has representatives of:
  - private sector
  - consumers
  - academia
- Whether the NSB is independent and has the authority to:
  - adopt and revoke standards
  - select its workforce and determine the position and staffing of its workforce
  - determine its own budget
  - determine the price of standards publications
  - decide on new service and/or structures
- Number of national standards published.
- Number of national technical committees (TCs).
- Percentage of industry participation in TCs.

29 It is important to note that it is not uncommon for the first PC to account for a relatively small proportion of the variation (e.g. see Filmer and Pritchett 2001; MacKenzie 2005), reflecting the number of variables included in the analysis and/or the complexity of correlations between the variables.

30 The first PC has the largest eigenvalue, indicating that it represents the most important direction in which the data associated with the policy/legislative environment index vary. The second and third PCs also had eigenvalues exceeding one, accounting for 18 and 15 per cent of the variation, respectively. These PCs represent the second and third most important direction in which the data vary. Note that PCs with eigenvalues lower than one are excluded since they account for less variance than the corresponding variables before the PCA was applied.

Most of these indicators are categorical in nature and so immediately amenable to the PCA. The data on number of standards and TCs and on private sector participation in TCs are converted into binary categories in the following manner:

- Whether the number of standards published exceeds the average for those of the 49 countries in the sample that belong to the same income grouping.[31]
- Whether the number of TCs established exceeds the average for those of the 49 countries in the sample that are in the same income grouping.
- Whether industry participation in TCs exceeds 30 per cent.[32]

These reflect the focus of the index on relative capacity and the fact that, while it is difficult to define absolute benchmarks for the number of standards and TCs, the numbers needed will broadly reflect a country's level of economic development.

The first PC accounts for 50 per cent of the variation across the 12 indicators (see Annex C).[33] All of the indicators had positive values exceeding 0.4. Having established a NSB and the collective of indicators capturing independence of the NSB have the greatest influence on the value of the standardization index. The representation of consumers on the NSB has the least influence.

Annex figure C.2 reports the value of the standardization index for the 49 countries covered by the analysis. Countries with the highest level of capacity are Singapore, Zambia and Zimbabwe. Cape Verde, the Central African Republic, the Republic of the Congo, the Democratic Republic of the Congo (DRC), Maldives, Mauritania, Timor-Leste and Togo are revealed to have the lowest level of standardization capacity.

Technical regulations

The initial formulation of the technical regulation capacity index consisted of 11 asset indicators. However, the results of the PCA indicated that these indicators did not organize well into a single first PC. Rather, there were two clear PCs, such that the index was subsequently divided into two indices as follows: (1) technical regulation capacity; and (2) capacity of WTO-related institutions respective to technical regulations and standards. The results for the latter index will be reported further in the last section of this chapter on WTO-related institutions.

The technical regulation capacity index has three asset indicators:

- Whether a national technical regulation framework common to all regulatory agencies has been implemented.
- Whether a central office responsible for the overall technical regulation framework has been established.
- Whether there is an explicit regulatory reform programme under way.

The only PC on the technical regulation capacity index with an eigenvalue exceeding one accounted for 57 per cent of the variation in the three indicators across the 49 countries covered by the analysis (see Annex C). Countries with the highest score on this index, indicating that they have the greatest capacity relative to the 49 countries as a whole, are Viet Nam and the Democratic People's Republic of Korea (see Annex figure C.3). Almost half of the countries in the analysis jointly have the lowest value on the technical regulation capacity index.

Metrology

There are 22 asset indicators in the metrology scale, as follows:

- Whether a national metrology institute (NMI) is in place.
- Whether the NMI is a signatory of the Metre Convention.
- Whether the NMI is a member of the International Bureau of Weights and Measures (BIPM).
- Whether the NMI is independent and has the authority to:
  - define which measurements standards are national standards
  - officially designate other institutions as custodians of national measurement standards
  - select its workforce and determine the position and staffing of its workforce
  - determine its own budget
  - decide on new services and/or structures
- Whether at least one national measurement standard has been established by the NMI or by another designated institution.
- Whether the country's calibration and measurement capabilities have been entered in the Mutual Recognition Arrangements database of the International Committee for Weights and Measures (CIPM).
- Whether a legal metrology department/agency has been established.
- Whether the following groups of measurement instruments within the legal metrology department/agency are subject to legal controls:
  - trade (e.g. scales, fuel dispensers, alcoholic drink measures)
  - law enforcement (e.g. vehicle loads, alcoholic drink measures)
  - health and safety (e.g. thermometers, blood pressure meters)
  - environmental controls

31 Here, the World Bank country income categories (low-income, lower middle-income, upper middle-income, and high-income countries) are employed, see: http://data.worldbank.org/about/country-classifications/country-and-lending-groups.
32 That is taken as a threshold reflecting a "reasonable" level of industry participation.
33 The second and third PCs also had eigenvalues exceeding one, accounting for 11 and 10 per cent of the variation, respectively.

- Whether at least one group of pre-packaged goods is subject to legal controls.
- Whether calibration services provide for measurement traceability for all basic parameters (i.e. volume, mass and thermometry).
- Whether calibration services for all basic parameters are accredited.
- Whether calibration services provide for measurement traceability for all intermediate parameters (i.e. pressure, electrical length, time and frequency).
- Whether calibration services for intermediate basic parameters are accredited.
- Whether calibration services provide for measurement traceability for all sophisticated parameters (i.e. radiation, photometry, flow, acoustics and amount of substance).
- Whether calibration services for all sophisticated parameters are accredited.

The first PC accounts for 45 per cent of the variation (see Annex C).[34] The assets with the highest loadings on this PC, and thus having the greatest influence on the overall value of the index, are the availability of calibration services for sophisticated parameters allowing for measurement traceability, whether calibration services for sophisticated parameters were accredited, whether the country's calibration and measurement capabilities had been entered in the CIPM MRA database, and whether the NMI had authority to officially designate other institutions as custodians of national measurement standards. The collective of indicators associated with the country's legal metrology department/agency have the least influence.

Annex figure C.4 reports the value of the metrology index. Countries with the highest level of capacity are Malaysia, the Republic of Korea, Singapore, South Africa and Indonesia. Timor-Leste has by the far the lowest level of capacity. Other countries with low levels of metrology capacity include the Democratic Republic of the Congo, Lesotho, Niger, the Central African Republic, Guinea-Bissau, the Republic of the Congo, Togo and Liberia.

Accreditation

The accreditation index consists of 12 asset indicators as follows:

- Whether a national accreditation body (NAB) is operational or, if not, whether a regional accreditation body (RAB) is available.
- Whether the NAB or RAB is a member of at least one mutual recognition arrangement (MRA), namely IAF, ILAC, APLAC or OECD GLP.[35]
- Whether the NAB or RAB is independent and has the authority to:
  - accredit entities that demonstrably meet the appropriate criteria
  - select its workforce and determine their position and staffing
  - determine its own budget
  - decide on new services and/or structures
- Whether there are any of the following entities that have been accredited by the NAB or RAB:
  - calibration laboratories (ISO/IEC 17025)
  - test laboratories (ISO/IEC 17025)
  - inspection bodies (ISO/IEC 17020)
  - certification bodies for systems (ISO/IEC 17021)
  - certification bodies for products (ISO/IEC Guide 65)
  - certification bodies for private standards such as BRC, IFS, GlobalGAP, etc.

Around 53 per cent of the variation across the 12 indicators is accounted for by the first PC (see Annex C).[36] The four assets with the heaviest loadings on this first PC are all members of the collective capturing NAB/RAB independence. Whether the NAB/RAB has the authority to select its workforce and determine the position and staffing of its workforce stand out as the assets having the greatest influence on the value of the index, with a loading of 0.877. Evidently, very few of the 49 countries covered by the analysis satisfy this requirement.

Malaysia, the Philippines, Singapore and South Africa have the highest value of the accreditation index, indicating that they have the most developed capacity. Countries with the least accreditation capacity on the basis of the value of the index are the Central African Republic, Eritrea, Guinea-Bissau, Liberia, Madagascar, Rwanda, Sierra Leone and Timor-Leste (Annex figure C.5).

Inspection

There are seven asset indicators comprising the inspection capacity index:[37]

- Whether any of the national inspection bodies (NIBs) in the country have been accredited to ISO/IEC 17020

34 The second, third and fourth PCs also had eigenvalues exceeding one, accounting for 12 per cent, 10 per cent and 9 per cent of the variation, respectively.
35 IAF is the International Accreditation Forum, ILAC the International Laboratory Accreditation Cooperation, APLAC the Asia Pacific Laboratory Accreditation Cooperation, and OECD GLP the Organization for Economic Cooperation and Development's Principles of Good Laboratory Practice.
36 The second and third PCs also had eigenvalues exceeding one, accounting for 16 per cent, 8 per cent of the variation, respectively.
37 Initially an additional asset indicator was included in the index, namely whether any NIBs have been established in the country. However, this was subsequently excluded because all countries have an NIB place, meaning that the respective indicator has zero variance.

- Whether any of the NIBs are recognized and/or designated in foreign countries for providing inspection services in each of the three priority export sectors and each of the three priority import sectors identified for the country[38] (yielding a total of six different asset indicators)[39].

The first PC accounts for 69 per cent of the variation across these seven indicators.[40] All of the loadings of the asset indicators on this PC exceed 0.8, indicating a strong influence on the value of the inspection capacity index. The one exception is whether the NIB is accredited to ISO/IEC 17020, which is evidently a much weaker indicator of relative inspection capacity across the 49 countries in the analysis.

The Philippines, Kenya, Guinea and Togo stand out as having the greatest level of inspection capacity (Annex figure C.6). Other countries with relatively strong capacity are Tanzania, Singapore, Madagascar, Ghana, Côte d'Ivoire and Benin. A total of 23 countries jointly have the lowest values for the inspection capacity index, typically only having one of the seven assets in the index in place.

Testing

The testing capacity index consists of eight indicators as follows:

- Whether there are any laboratories (public or private) established and operational for testing on request by industry or for regulatory purposes.
- Whether any of the laboratories have been accredited to ISO/IEC 17025.
- Whether any of the laboratories are recognized and/or designated in foreign countries for providing inspection services in each of the three priority export sectors and each of the three priority import sectors identified for the country (yielding a total of six different asset indicators).

The first PC accounts for 65 per cent of the variation across the eight asset indicators (see Annex C).[41] The asset indicator having the greatest influence on the value of the index is having a laboratory that is recognized or designated for testing services in foreign countries for the third most important priority export sector. Having laboratories established and operational for testing services and whether these laboratories are accredited to ISO/IEC 17025 have the least influence on the value of the index.

Countries that were identified to have good testing capacity include Guinea, Kenya, Pakistan, the Philippines, Singapore, South Africa, Sri Lanka and Tanzania. By contrast, Timor-Leste is found to have the lowest value for the testing capacity index (see Annex figure C.7).

Certification

For the certification capacity index, 12 asset indicators were considered, as follows:

- Whether any certification bodies are operational and active for the following certification schemes:
  - ISO 9001
  - ISO 14001
  - ISO 22000 or HACCP
  - BRC, IFS or equivalent
  - GlobalGAP
- Whether any of these certification bodies are accredited for:
  - ISO 9001
  - ISO 14001
  - ISO 22000 or HACCP
  - BRC, IFS or equivalent
  - GlobalGAP
- Whether a national product certification mark scheme is operational.
- Whether the national product certification mark scheme is accredited to ISO/IEC Guide 65.

The first PC accounts for 54 per cent of the variation across the 49 countries with respect to the 12 asset indicators (see Annex C).[42] The two indicators regarding capacity to certify to GlobalGAP, and the two indicators in respect of a national product certification mark scheme have the lowest loadings on the first PC, and thus are least important in driving variation in certification capacity. The asset indicators with the highest loadings relate to accredited certification bodies for ISO 9001, ISO 14001 and ISO 22000/HACCP.

The single country scoring highest on the accreditation capacity index is South Africa (Annex figure C.8). Other countries with high scores are Sri Lanka, Senegal, Pakistan and Kenya. Meanwhile, Burkina Faso, the Central African Republic, the Democratic Republic of the Congo, the Gambia, Guinea-Bissau, Liberia, Maldives, Niger and Timor-Leste have the lowest level of capacity relative to the 49 countries covered by the analysis as a whole.

38 The three priority export sectors were identified by UNIDO based on United Nation COMTRADE statistics. They represent the three most important sub-sectors within agriculture, agrifood, textiles and footwear industries at the 2-digit level of HS classification. Meanwhile, respondents were asked to identify the three priority import sectors which should represent the three most important import sectors where product quality and safety is a major concern.

39 Importantly, this index (and also that for Testing), includes items that focus on needs for priority export sectors. Whilst these sectors will vary across countries, this does not negate the ability to compare the values of the index across countries. Critically, the basis of the index is on relative capacity compared to needs, rather than on the basis of particular assets or functions per se.

40 The second and third PCs have eigenvalues of 2.3 and 1.7 and account for 14 per cent and 11 per cent of the variation, respectively. The fourth PC has an eigenvalue of 1.3 but accounts for less than 1 per cent of the variation.

41 Only one other PC has an eigenvalue exceeding one, which accounts for 13 per cent of the variation.

42 Two other PCs have eigenvalues exceeding one, accounting for 13 per cent and 9 per cent of the variation, respectively.

Food safety

There are 11 indicators in the food safety capacity index as follows:[43]

- Whether there is a national policy for food safety and quality.
- Whether there is a food safety law/legislation.
- Whether food safety regulations and standards are harmonized with the international standards, guidelines and recommendations of Codex Alimentarius.
- Whether a national entity has been established to manage food safety issues for:
  - fresh produce (incl. plants & seeds)
  - food processing
  - market place surveillance
  - storage and transport
- Whether laboratories are available for food safety testing[44].
- Whether there is capacity for food safety-related inspection of food processing establishments.
- Whether there is capacity for food safety-related certification.

The first PC of the food safety capacity index accounts for 47 per cent of the variation across the 11 asset indicators (see Annex C).[45] Among the indicators, capacity for laboratory testing, inspection and certification relating to food safety have the lowest weighting and, as a consequence, are the weakest drivers of the food safety index. Having national entities for the management of food safety for fresh produce, food processing, storage and transport have the heaviest weightings, which suggests appreciable variation in the incidence of these assets across the 49 countries in the analysis.

The countries with the lowest level of food safety capacity on the basis of the index are the Congo, Eritrea, Ghana and Niger (Annex figure C.9). Conversely, 16 countries jointly have the highest value of the index. As with the index on WTO-related institution respective to technical regulations and standards (see below), there is evidently relatively little variation in capacity, but with a small number of countries standing out as having relatively very low levels of capacity.

43 An additional three asset indicators were included in the original specification of the index. These related to whether laboratories available for food safety testing are accredited, whether food processing establishments are mostly or fully inspected, and whether food safety-related certification covers most or all of applicable establishments. All of these items had low and negative weightings on the first PC and were subsequently excluded from the final formulation of the food safety capacity index.

44 Note that there is some degree of overlap with this item, and the two below, with the indexes for testing, inspection and certification capacity. Whilst this should be taken into account in interpreting the results, it is not a major issues since no effort is made to aggregate the indices into an overall and single TSCI index.

45 A further two PCs had eigenvalues exceeding one, accounting for 16 per cent and 13 per cent of the variation, respectively.

WTO-related institutions respective to technical regulations and standards

The index on WTO-related institutions respective to technical regulations and standards has asset indicators reflecting obligations under the SPS/TBT Agreements for current or aspiring Member States:[46]

- Whether a national Notification Authority as required by the WTO TBT Agreement has been appointed.
- Whether notifications regarding new technical regulations have been sent to the WTO TBT Secretariat in recent years.
- Whether a national Enquiry Point as required by the WTO TBT Agreement has been appointed.
- Whether the Enquiry Point has been properly notified to the WTO TBT Secretariat.
- Whether a national Notification Authority as required by the WTO SPS Agreement has been appointed.
- Whether notifications regarding new technical regulations have been sent to the WTO SPS Secretariat in recent years.
- Whether a national Enquiry Point as required by the WTO SPS Agreement has been appointed.
- Whether the Enquiry Point has been properly notified to the WTO SPS Secretariat.

The first PC of the WTO-related institutions respective to technical regulations and standards index accounts for 54 per cent of the variation across the six asset indicators. No other PCs had eigenvalues exceeding one. The greatest weighting is assigned to having a national EP appointed for the TBT Agreement. The two indicators having the lowest weightings on this PC relate to having a national Notification Authority and Enquiry Point under the SPS Agreement.

Countries with the lowest score on the WTO-related institutions respective to technical regulations and standards scale (Annex figure C.10) are Eritrea and the Democratic People's Republic of Korea (DPR).[47] Timor-Leste, the Central African Republic and Guinea-Bissau are also indicated to have very low capacity relative to all countries in the analysis. Conversely, 24 countries jointly have the highest level of capacity on the index. Taken as a whole, these results suggest relatively little variation in capacity across the 49 countries covered by the analysis; the majority of these countries have all or most of the assets in the index in place. There are, however, some notable countries with very low levels of relative capacity, of which Eritrea and Korea DPR and most noteworthy.

46 The initial index included two asset indicators relating to whether the national Enquiry Points under the TBT and SPS agreements had received enquiries from other WTO member states. However, both of these indicators had very small and negative loadings on the first PC, and as a result were excluded from the final index.

47 Note that neither of these countries are currently WTO members.

3.6. Comparing compliance capacity across indices

Because the indices presented above are derived through PCA of distinct sub-sets of indicators, both their extreme values and range vary; this can be observed by comparing the values reported in Annex figures C.1 to C.10. As a result, it is not possible to make meaningful comparisons between the scores across the indices, as would be required in order to compare the capacity of any one country across the trade standards compliance functions. Such comparisons can be facilitated, however, through the transformation of the index scores into categories.

Below, the scores for the 10 indices are converted into quintiles and the mean score for each of the five categories is calculated.[48] The positioning of each country within these quintiles is then used as a ranking, enabling straightforward comparisons of countries within and across the indices; the first quintile corresponds to the "weakest capacity" and the fifth quintile to the

48 In studies using asset indices, the data from these categories represents levels of wealth/assets and is used as a dependent variable in regression analysis to explain variations in wealth across households (see for example Filmer and Pritchett, 2001).

Table 3.1. *Country distribution by quintile in the 10 capacity areas*

Country	Quality policy/ legislative framework	Standardization capacity	Technical regulation capacity	Metrology capacity	Accreditation capacity	Inspection capacity	Testing capacity	Certification capacity	Food safety capacity	WTO-related institutions respective to technical regulations and standards
Bangladesh	3	4	2	3	4	3	4	4	3	4
Benin	2	3	2	4	3	5	3	2	3	4
Burkina Faso	5	2	2	3	2	3	5	1	5	4
Burundi	3	2	4	2	3	4	1	3	4	2
Cambodia	3	2	4	3	3	2	4	3	5	2
Cape Verde	1	1	4	4	3	4	3	4	5	4
Central African Republic	1	1	2	1	1	2	3	1	2	1
Congo	1	1	2	1	4	5	1	3	1	2
Côte d'Ivoire	1	3	2	2	4	5	3	4	4	3
DRC – Congo	1	1	2	1	2	2	4	1	2	1
Eritrea	3	3	2	4	1	2	1	2	1	1
Gambia	4	4	2	2	2	2	1	1	3	2
Ghana	2	3	4	5	2	5	4	4	1	4
Guinea	3	3	2	3	3	5	5	2	2	2
Guinea-Bissau	1	2	2	1	1	2	1	1	2	1
Indonesia	4	5	5	5	5	3	3	4	5	4
Kenya	3	5	4	4	5	5	5	5	3	4
Korea DPR	5	4	5	5	4	2	1	5	5	1
Lesotho	1	2	4	1	3	2	1	2	2	1
Liberia	1	1	4	1	1	2	1	1	5	2
Madagascar	4	2	5	2	1	5	3	3	1	4
Malawi	2	5	4	3	3	2	1	2	2	3
Malaysia	5	5	2	5	5	3	4	4	3	4

Country	Quality policy/ legislative framework	Standardization capacity	Technical regulation capacity	Metrology capacity	Accreditation capacity	Inspection capacity	Testing capacity	Certification capacity	Food safety capacity	WTO-related institutions respective to technical regulations and standards
Maldives	1	1	2	2	2	2	3	1	3	3
Mali	3	4	5	2	2	3	3	4	4	3
Mauritania	2	1	5	2	2	4	4	2	2	4
Mongolia	5	2	4	3	5	4	4	4	5	2
Namibia	4	4	2	4	4	4	4	2	2	3
Nepal	2	2	2	2	3	2	3	2	1	3
Niger	2	2	2	1	2	2	1	1	1	2
Nigeria	5	3	5	4	1	2	1	2	5	4
Pakistan	5	4	2	5	4	2	5	5	5	4
Philippines	2	3	2	3	5	5	5	5	2	4
Republic of Korea	5	3	2	5	5	4	3	5	5	4
Rwanda	4	4	4	3	1	2	1	4	2	4
Senegal	2	3	2	2	2	2	3	5	3	4
Seychelles	3	4	4	4	4	4	4	4	5	2
Sierra Leone	4	4	5	4	1	2	1	2	1	1
Singapore	4	5	4	5	5	5	5	4	5	4
South Africa	5	5	4	5	5	4	5	5	5	4
Sri Lanka	5	5	2	4	5	2	5	5	5	4
Swaziland	4	4	5	2	3	4	3	4	2	4
Tanzania	2	5	5	3	4	5	5	3	3	4
Timor-Leste	1	1	2	1	1	2	1	1	1	1
Togo	3	1	4	1	2	5	5	1	3	1
Uganda	3	3	4	3	4	2	4	3	1	4
Viet Nam	5	2	5	5	5	3	3	4	5	4
Zambia	5	5	4	4	3	2	3	3	3	4
Zimbabwe	3	5	2	5	4	2	3	3	5	2

"strongest capacity".[49] Table 3.1 gives an overview and provides a summary of the relative performance of each country in our sample (in terms of the quintile in which it is positioned) across the 10 capacity areas. The quintiles also provide an indication of the level of "inequality" in compliance capacity. If capacity is uniformly distributed across the 49 countries, the difference in the mean capacity scores between adjoining quintiles will be even (Filmer and Pritchett 2001). Table 3.2 reports the mean scores for each of the 10 indices. For many of the indices, there is a greater difference between the first and second quintiles (corresponding to relative "low" levels of capacity for the respective compliance function) than between the third, fourth and fifth quintiles (corresponding to relative "high" levels of capacity for the respective compliance function).[50] This

49 Note that some of the indexes do not separate into five distinct categories because of the manner in which the 49 countries are distributed.

50 Clumping is a common problem in studies using asset-based measures. Another problem is truncation of the asset index distribution which arises when there are no variables that distinguish between classification groups (Mackenzie, 2005).

Table 3.2. Mean compliance capacity scores by quintile

Capacity area	Quintile 1 (weakest capacity)	Quintile 2	Quintile 3 (medium capacity)	Quintile 4	Quintile 5 (strongest capacity)
Policy/legislation framework	−1.57	−0.40	0.12	0.68	1.14
Standardization	−1.82	−0.37	0.35	0.67	0.99
Metrology	−1.17	−0.73	−0.10	0.33	1.55
Accreditation	−1.51	−0.76	0.22	0.64	1.22
Inspection	−0.78		−0.33	1.21	1.69
Testing	−0.91		−0.57	0.49	1.64
Certification	−1.34	−0.79	0.08	0.81	1.26
Technical regulations	−0.81			0.52	2.84
WTO institutions related to technical regulations	−1.77	−0.17	0.24	0.68	
Food safety	−1.86	−0.21	0.57	0.59	0.77

suggests that countries with the lowest levels of capacity are particularly weak. There is less difference between countries at relatively higher levels of capacity. The most extreme clumping of countries at lowers levels of capacity is seen with the indices for inspection, testing and technical regulations such that it is not possible to define five distinct quintiles.[51]

Figures 3.2 to 3.11 present the arrays of capacity across each of the 10 specific trade standards compliance functions for which indices are derived above, with countries categorized according to the quintiles defined above. It is important to remember that relative capacity increases as a country moves from quintile 1 to quintile 5. It is easy to identify those countries with "high", "medium" and "low" levels of capacity in each of the ten areas relative to the other countries in the analysis. Importantly, *the arrays say nothing about the capacity of the 49 countries relative to countries excluded from the analysis*.

In the case of standardization capacity, for example, Cape Verde, the Central African Republic, the Congo, the Democratic Republic of the Congo, Liberia, Maldives, Mauritania, Timor-Leste and Togo are all in the first quintile indicating that they have the weakest capacity relative to the 49 countries covered by the analysis (figure 3.3). Table 3.2 indicates that quintile 1 has a much lower mean score than quintile 2 (–1.82 versus –0.37), suggesting that countries in this bottom quintile have particularly weak standardization capacity. Countries in quintile 5, with the highest level of standardization capacity among the 49 countries in the analysis, are Indonesia, Kenya, Malawi, Malaysia, Singapore, South Africa, Sri Lanka, Tanzania, Zambia and Zimbabwe. There is a relatively small decline in the mean scale score from quintile 5 to quintile 4 (from 0.99 to 0.67), suggesting that countries in quintile 4 have marginally weaker standardization capacity. These countries are Bangladesh, the Gambia, Mali, Namibia, the Democratic People's Republic of Korea, Pakistan, Rwanda, Seychelles, Sierra Leone and Swaziland.

The key role of grouping countries into quintiles is to enable comparisons across particular countries, or groups of countries, with respect to their capacity in the ten compliance functions. Figure 3.12, for example, presents the rankings for the Viet Nam, Philippines and Singapore, all of which are in Southeast Asia. The results reported earlier suggest that all three of these countries have relatively strong trade compliance capacity, broadly speaking, relative to the 49 countries covered by the analysis. However, it is evident from figure 3.12 that these countries do have some areas of weakness. For example, while Viet Nam is placed in the fifth quintile for quality policy/legislative environment, metrology, accreditation, technical regulations and food safety, its standardization capacity is in only the second quintile, and its testing and inspection capacity in quintile 3.

51 This may suggest that additional variables are needed to distinguish between countries at the lowest level of capacity.

Figure 3.2. *Array of policy/legislative framework capacity*

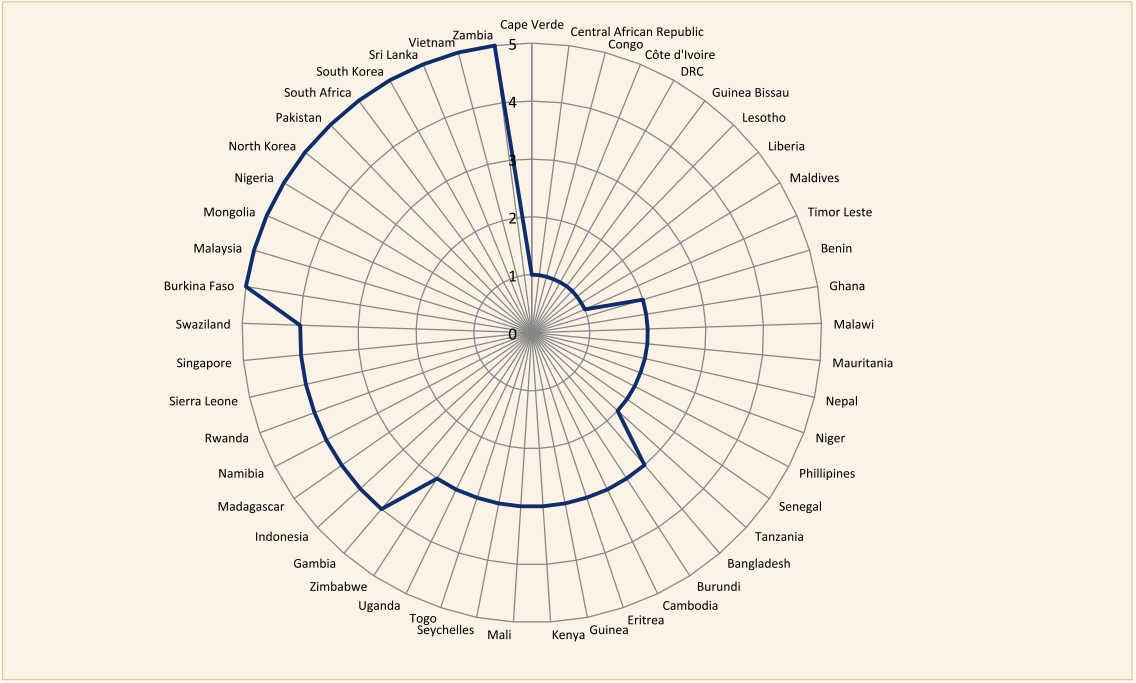


Figure 3.3. *Array of standardization capacity*

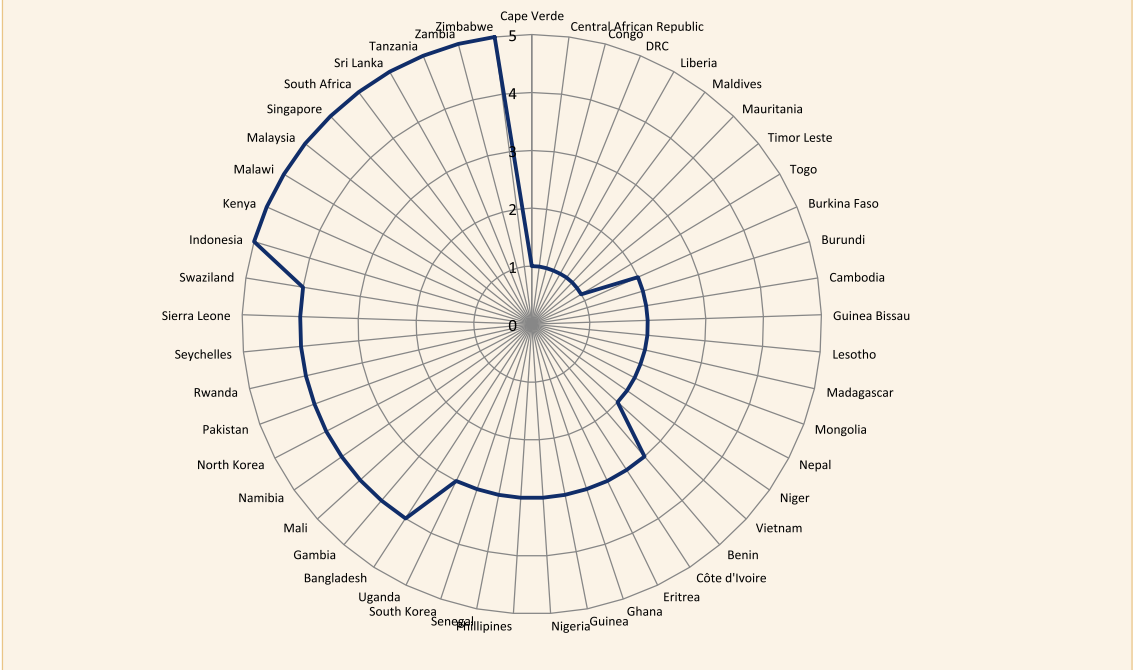


Figure 3.4. *Array of metrology capacity*

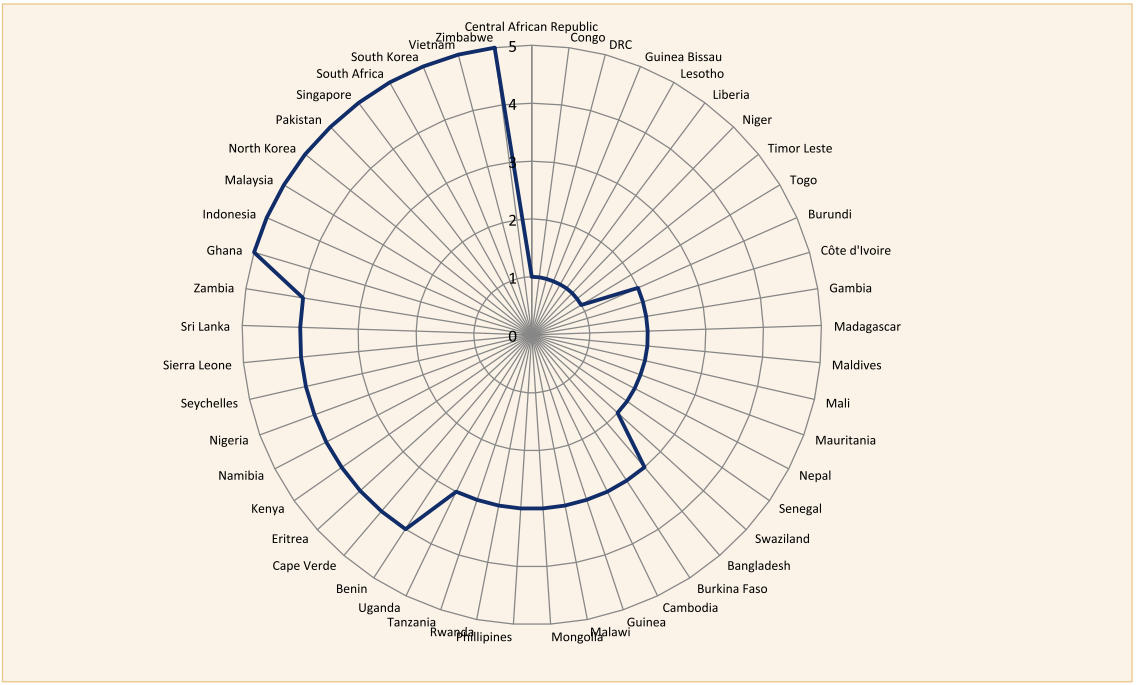


Figure 3.5. *Array of accreditation capacity*

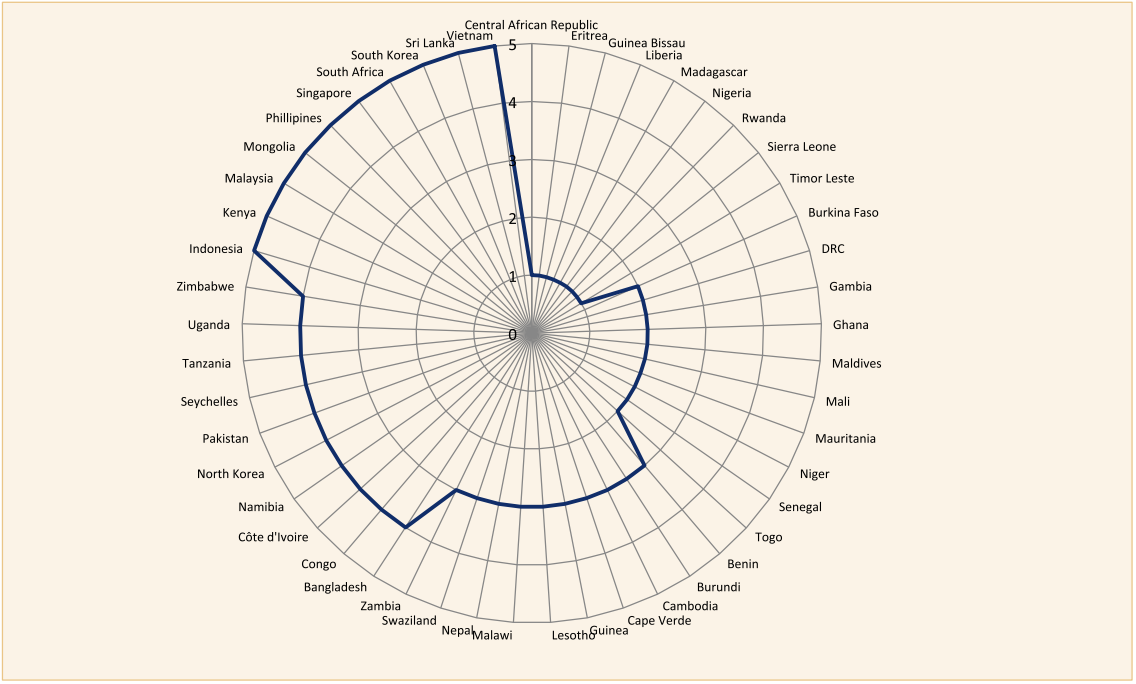


Figure 3.6. *Array of inspection capacity*

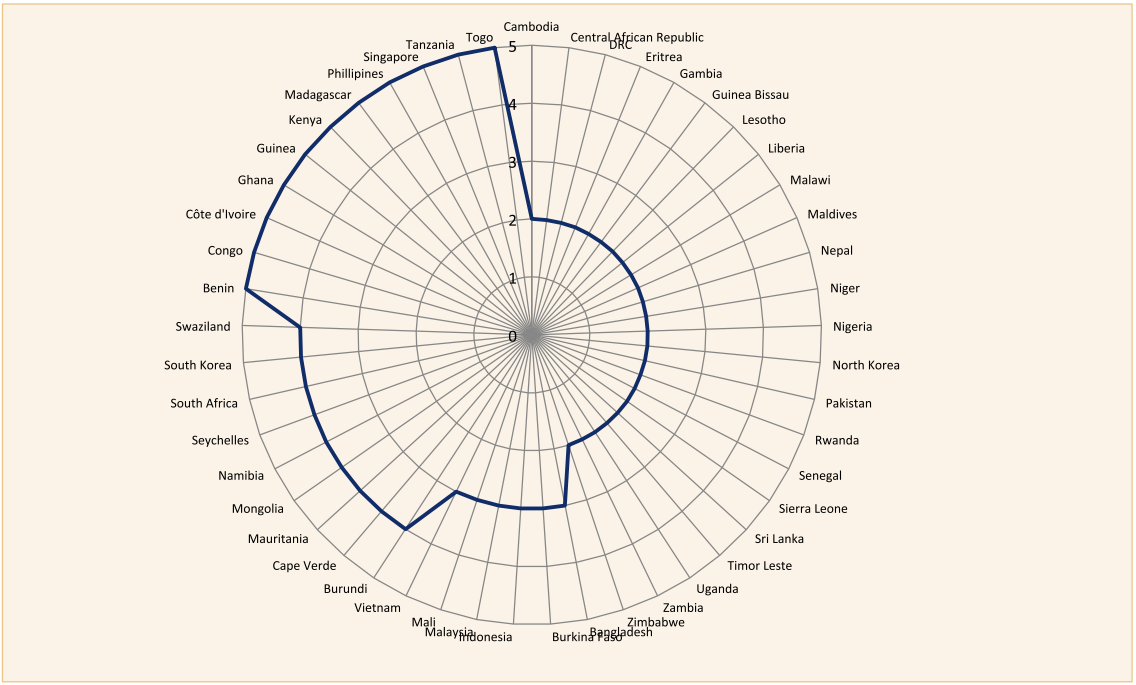


Figure 3.7. *Array of testing capacity*

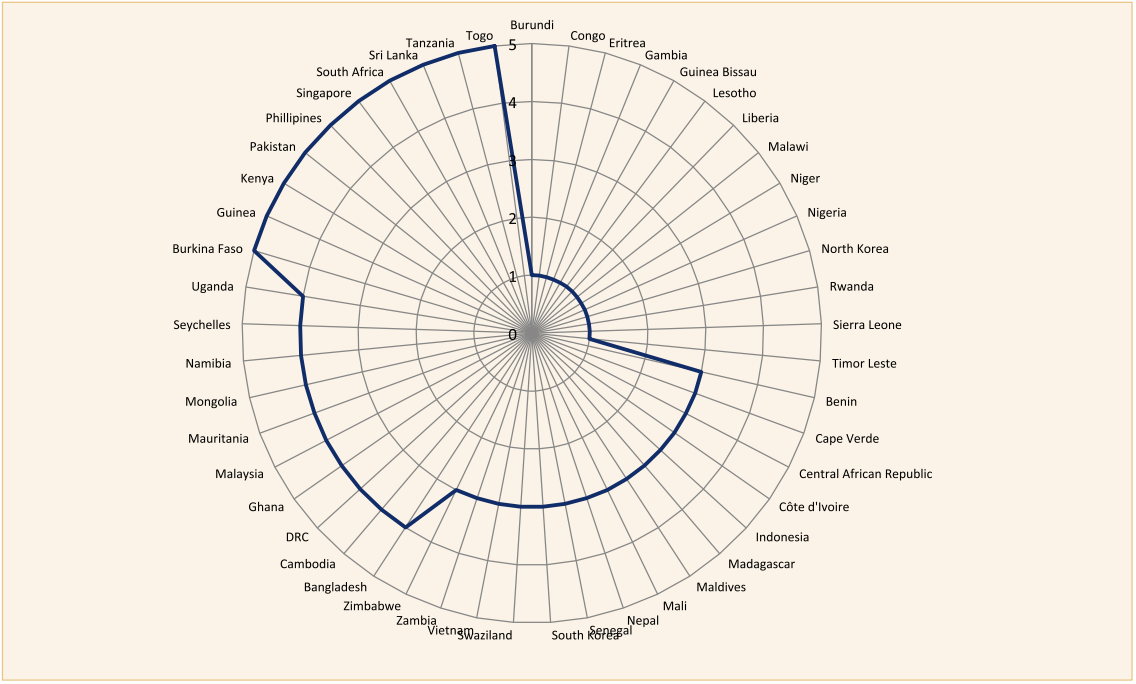


Figure 3.8. *Array of certification capacity*

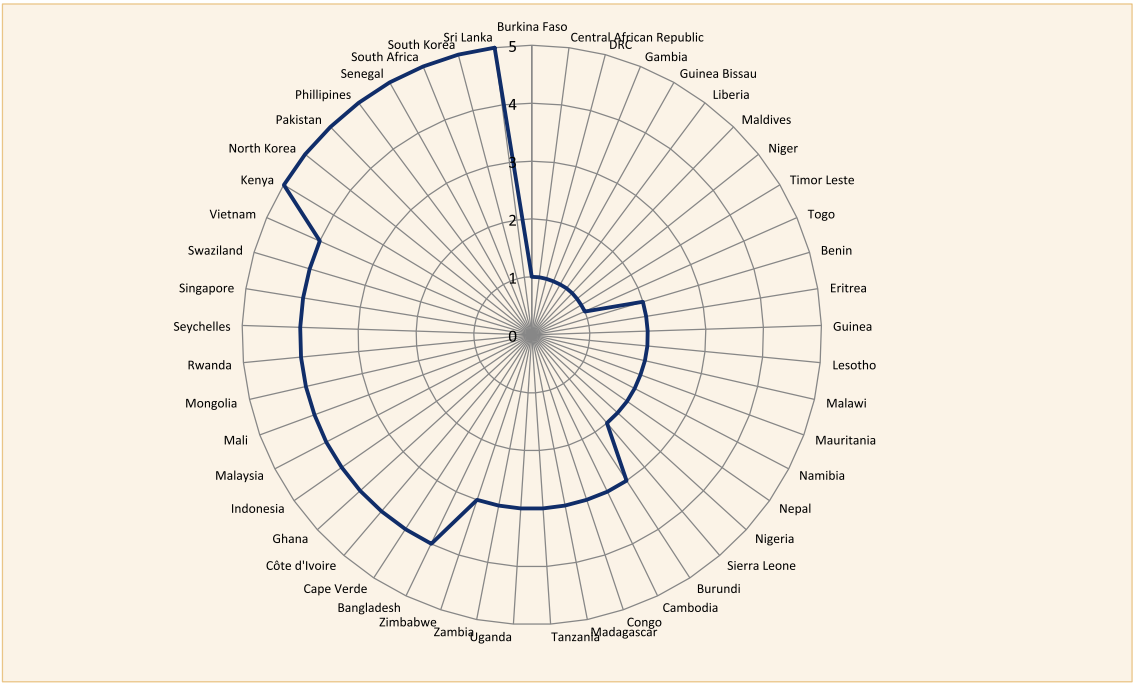


Figure 3.9. *Array of technical regulation capacity*

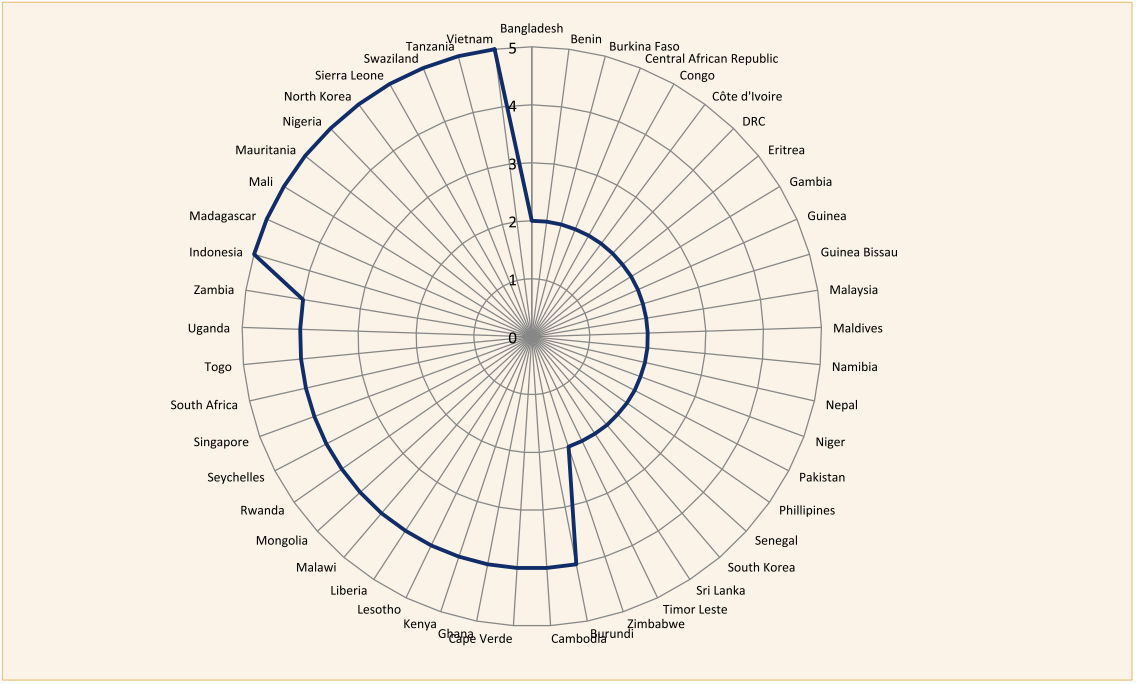


Figure 3.10. *Array of WTO institutions related to technical regulations and standards*

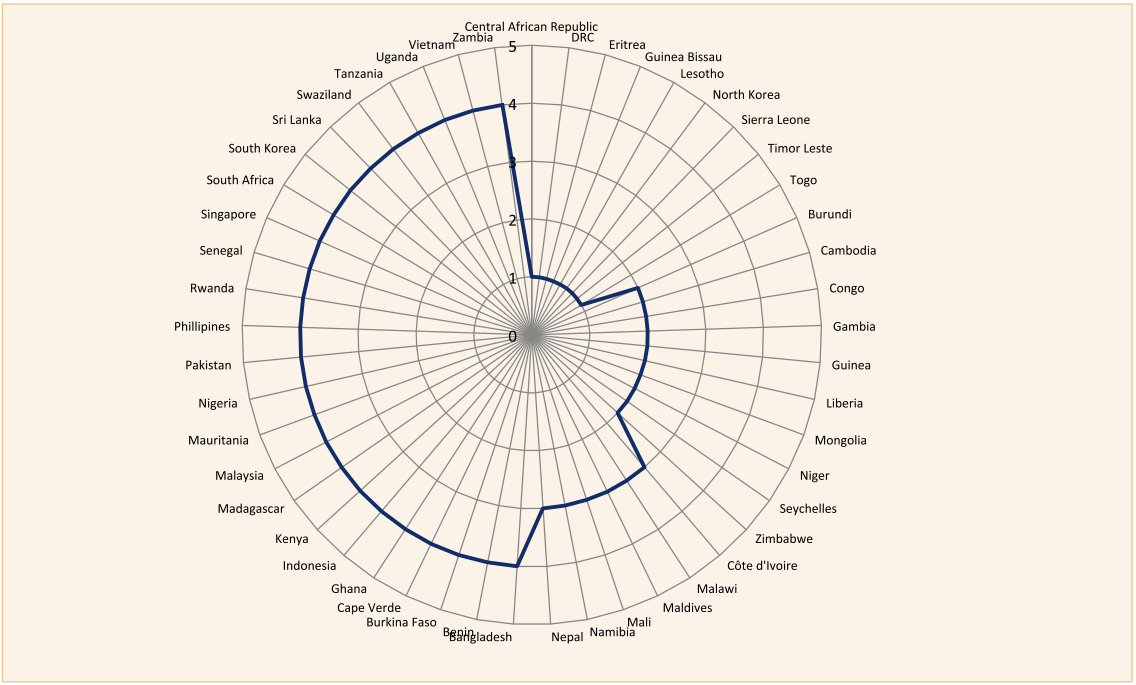
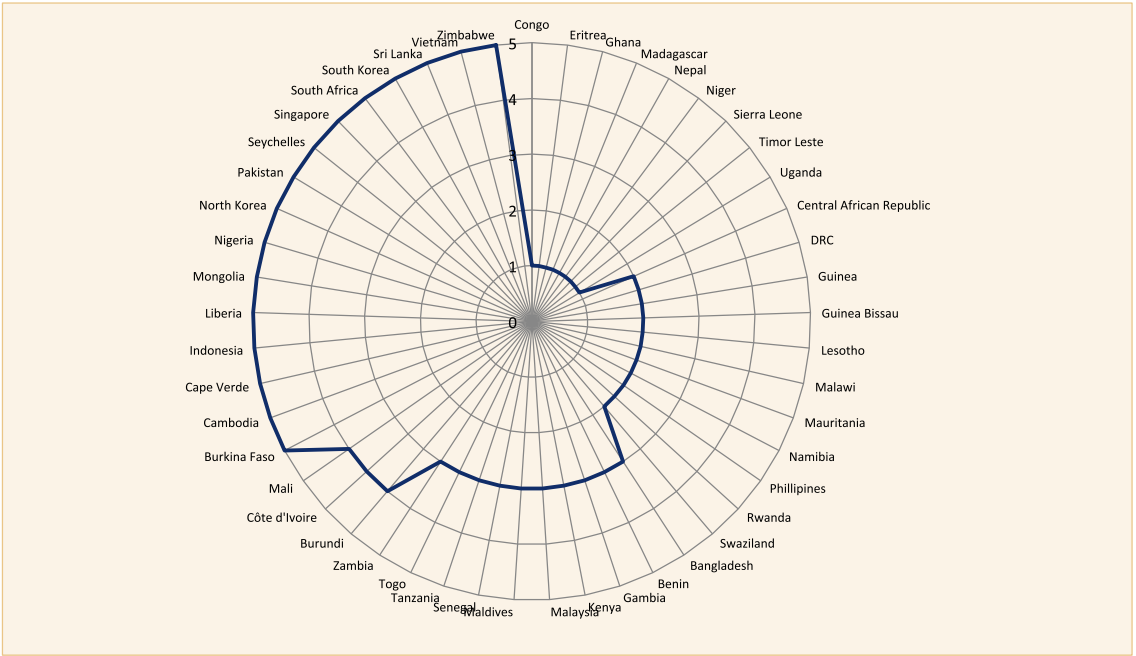


Figure 3.11. *Array of technical food safety capacity*



As further illustration of the utility of the capacity quintiles, figure 3.13 presents the results for three countries in West Africa. The results suggest that capacity within the region varies significantly. Niger is placed in the first or second quintiles for all 10 of the compliance functions; evidently, it has weak capacity across the board. Conversely, Burkina Faso is in the fifth quintile, indicating that it is in the group of countries with the highest level of capacity relative to all 49 countries in the analysis, for quality policy/legislative environment, testing, WTO-related institutions respective to technical regulations and standards, and food safety. However, it has weak capacity, being positioned in the first or second quintiles, for standardization, accreditation and technical regulations. Benin's capacity is likewise variable—for example, with quality policy/legislative environment and technical regulations in the second quintile but inspection in the highest quintile.

Figure 3.12. *Array of compliance capacity in Viet Nam, Philippines and Singapore*

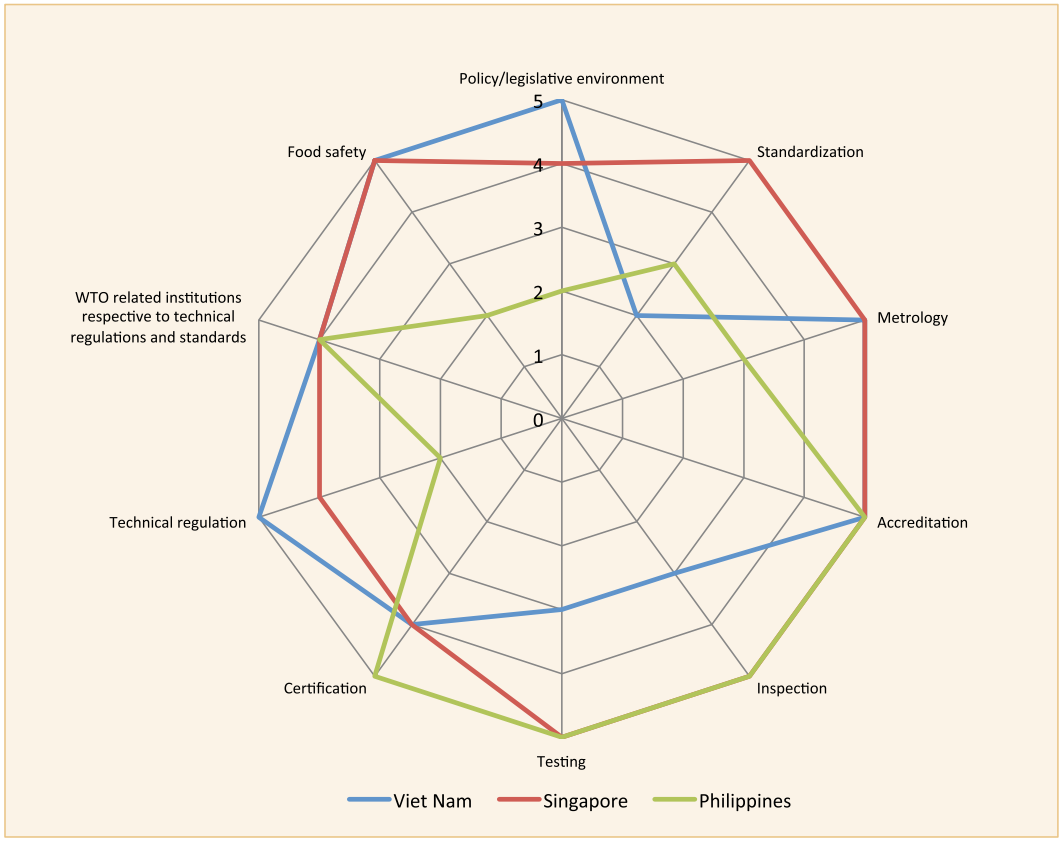
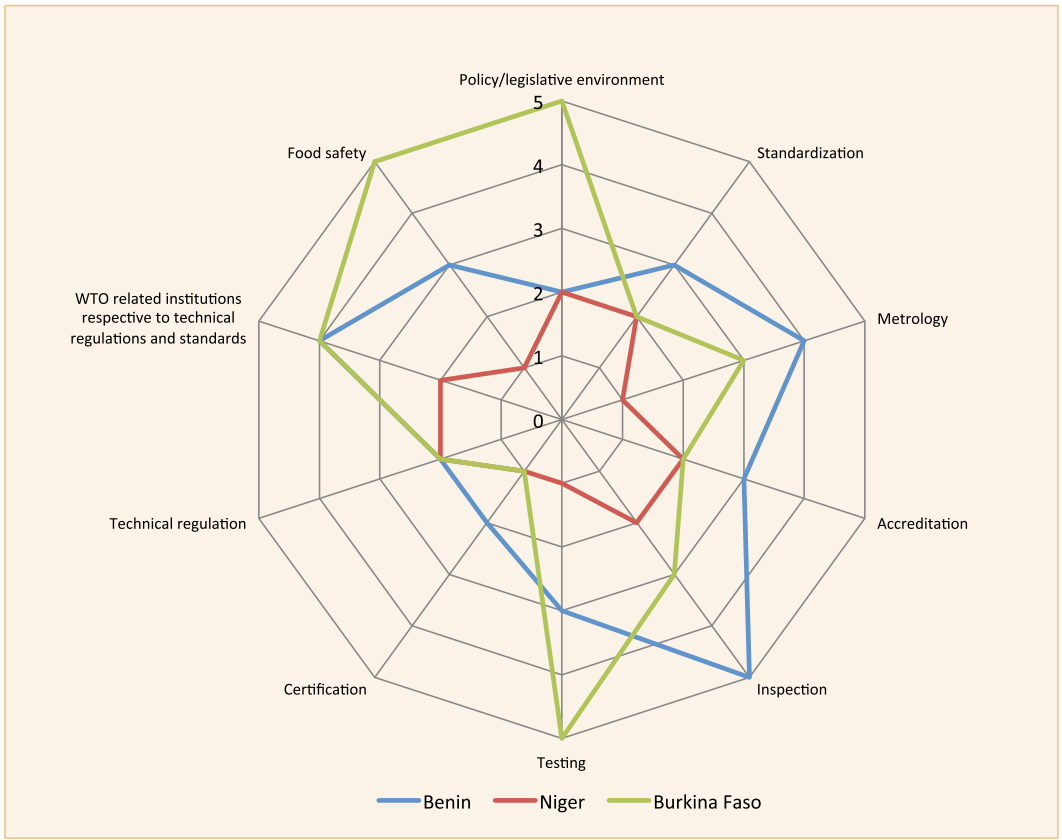


Figure 3.13. *Array of compliance capacity in Benin, Burkina Faso and Niger*



3.7. Conclusions

The aim of the TSCCI is to provide a relatively simple tool through which the capacity of developing countries across critical compliance capacity functions can be profiled and appraised. The set of indices aims to be of use in identifying where weaknesses in capacity persist, and thus where domestic quality infrastructure development efforts and/or international technical assistance might be best targeted. In turn, the impacts of domestic capacity building and/or technical assistance can be assessed and monitored using the TSCCI; the enhancement in capacity with respect to a particular function should be reflected in an increase in the value of the respective index. Overall increases in the TSCCI indices might also result in improvements in the country's trade competitiveness and should be reflected in a reduction in its import rejection rates. The assumption underlying the TSCCI is that, in a trade context, it is the capacity of a country *relative* to its competitors that matters. The implication is that, as the capacity of a competitor grows, so does the need for capacity enhancement in the focal country. The TSCCI, thus, also serves an important benchmarking function.

The analysis presented above takes as its starting point the core concepts and analytical approach outlined in the 2010 Trade Standards Compliance Report (UNIDO 2011). The prototype indices presented in the previous report, however, are thoroughly revised here and data collected and analysed that is more robust. Thus, a series of 10 indices focused on specific areas of trade standards compliance capacity are defined. For each, a series of empirical asset indicators are prescribed and data collected through a refined questionnaire on 49 countries. While further validation of the results is needed, they are considered to be of sufficient rigor that they can be reported for named countries.

It is important to recognize, however, that the TSCCI very much remains "works in progress". There is a need to revisit the indicators for each of the compliance capacity functions to identify ways in which they can be refined in the light of the results of the data collection and analysis reported above. For example, the technical regulation function needed to be divided into two sub-indices. Further, certain asset indicators were dropped from the capacity indices on inspection, WTO-related institutions respective to technical regulations and standards, and food safety. More broadly, some further efforts are warranted to make the indicators more performance-oriented such that they are truly indicative of a country's capacity to comply with trade standards and of the performance of the quality infrastructure in place to ensure such compliance. Another question to be explored will be whether—in addition to increasing the preciseness of indicators for the "horizontal" quality infrastructure dimensions (i.e. generic or cross-cutting compliance capacity functions)—additional "vertical" elements should be included in the TSCCI in order to capture sector-specific capacities that are relevant for industries other than agrifood. Finally, it is anticipated that the survey instrument used to collect the underlying data can be reduced and refined, and that this will be employed to a larger set of countries moving forward.

The ultimate aim is for the TSCCI to be applied to a more comprehensive set of industrialized and developing countries and for these data to be updated on an ongoing basis to reflect changes in capacity over time. It is important to recognize that, given the relative nature of the indices, the values for all countries will be re-estimated as additional countries are included. Beyond regular reporting in periodic TSCRs, it is envisaged that the results will be made available through a website and reported as part of country-level trade standards compliance "report cards" being compiled by UNIDO as part of a toolbox comprising policy guidance and decision-making support tools for trade capacity-building and quality infrastructure development.

4. South–South Food Trade and Standards

4.1 The role of standards in South–South food trade: Setting the scene and some conceptual issues[52]

Introduction

South–South trade has expanded rapidly in the past decade. Overall, South–South trade—defined as trade between developing countries—grew by 320 per cent from 2000 to 2010.[53]

This growth far exceeds the growth in South–North trade, which increased by 132 per cent in the same period. By 2010 the total value of South–South trade exceeded the value of South–North trade by 25 per cent. Given this rapid growth, promoting South–South trade has become a policy objective of various international agencies.

This chapter is concerned with South–South trade in food. More specifically, it deals with the impact on trade between developing economies of different types of standards, both public and private, relating to food safety and human health, or animal and plant health. The impact of public regulations on South–North trade has long been discussed. More recently, attention has also focused on the role of private standards in trade between developing and developed economies. In what ways might food trade between developing economies be affected by standards, both public and private? What do policymakers in developing countries need to prioritize in order to further unleash the potential for South–South trade in food?

This section addresses the following issues:

- South–South trade in general is rising rapidly. But how important and how rapidly growing is South–South trade in food?
- The relevance of public and private standards for South–South food trade.
- Within public standards, the relative importance of standards for food safety and human health, as opposed to animal health and plant health.
- The evidence that standards act as, or are being (mis-)used as, barriers to trade.

It presents an overview of how South–South trade in food might be affected by public and private standards and is followed by three case studies of the impact of standards on South–South trade in Africa, Asia and South America.

Why South–South trade is a big issue

There are two main arguments put forward to justify increasing efforts to promote South–South trade. First, it is argued that South–South trade is growing more rapidly than South–North trade and therefore tapping into this dynamism would result in faster trade growth. Second, promoting one specific form of South–South trade, intra-regional trade, brings particular benefits to participating economies. Neither argument is new. In the 1970s and 1980s, the arguments in favor of South–South trade focused on the protectionism of Northern economies and the stagnation of the OECD economies in the 1970s (see Greenaway and Milner 1990: 48–50). More recently, there has been renewed interest in the dynamism of South–South trade, and various agencies have produced reports on the issue. South–South trade was the subject of a special report in the 2011 Asian Development Outlook (Asian Development Bank

52 This section has been authored by John Humphrey of the Institute of Development Studies (IDS), Sussex, UK

53 All trade data reported here is drawn from UNCTADstat database.

Box 4.1. *Country group definitions*

Developing Africa: All countries on the African continent, including North Africa. **Developing Asia:** All Asian countries, except Israel, Japan and the countries of the former Soviet Union. Includes Turkey, the four Asian NIEs and the Middle East. **Developing Americas:** All the Americas including the Caribbean, except Bermuda, Canada, Greenland, St. Pierre and Miquelon and the United States. **Developed countries:** Five American countries as above, Western Europe, other EU member states, Iceland, Australia and New Zealand Excludes Former Soviet Union and Eastern European members of Soviet Bloc that are not members of the EU. Additional small countries and territories are also distributed across these categories. **Source:** *http://unctadstat.unctad.org/UnctadStatMetadata/Classifications/UnctadStat.Countries.GeographicalRegionslist.Classification_En.pdf.*

2011); South–South cooperation featured as the special issue for the UNCTAD Least Developed Countries Report 2011 (UNCTAD 2011); the IMF drew attention to the BRICs[54] as new growth drivers for low-income countries (International Monetary Fund 2011).

This recent expansion of interest in the potential of South–South economic relations stems from some fundamental long-term shifts that have taken place in the world economy in the past two decades, as well as from the recent marked slowdown in growth in the leading industrialized countries after 2008. In particular:

- Because South–South trade has been growing more rapidly than South–North trade for more than a decade, Southern markets are now much more important as export destinations. In 1990, 60 per cent of developing country merchandise exports went to the developed economies. By 2010 that share had declined to 47 per cent. Developing countries are increasingly important trade partners for each other, and this should be reflected in trade initiatives.
- Underlying these trade trends is a structural change in the global economy. Put simply, economic growth in developing countries has outstripped growth in the developed economies, and as a result these developing economies, the "South", now account not only for an increasing share of global trade but also for an increasing share of global GDP. According to the Asian Development Bank, the South accounted for 41.3 per cent of global GDP in 2009, up from 27.8 per cent in 1990/91 (Asian Development Bank 2011: 46).[55] The difference in growth rates has been further evident following the 2008/09 global economic crisis and the low growth rates seen in Europe, Japan and the United States.

Within the overall expansion of South–South trade, particular attention has focused on the BRICs. The rapid expansion of China and India, in particular, has created new and dynamic market opportunities for developing countries. UNCTAD's 2011 Least Developed Countries Report emphasized the role of these two countries in driving export growth: "The two Asian giants, China and India, play a particularly prominent role in LDCs' growing integration with other developing countries. China and India became respectively the first and fourth largest markets for LDCs' exports, and the second and third source of LDCs' imports in 2009" (UNCTAD 2011: vi).

The second source of interest in South–South trade is equally long-standing. It is argued that promoting intra-regional trade in the South brings particular advantages to developing economies. Increased regional integration is associated with the achievement of efficiency gains from increases in market scale and specialization. In the case of the trade in food, emphasis has been placed on the role of intra-regional trade to provide greater regional food security.[56] Regional integration initiatives should enable greater intra-regional trade in food, as discussed by Fan and Boyd (2009), and contribute to regional food security.

South–South trade: Patterns and dynamics

Given that there are two quite distinct drivers for South–South trade, the data presented in table 1 for the growth of merchandise trade for the period 2000 to 2010 is disaggregated by intra-regional South–South trade, extra-regional South–South trade and South–North trade for each of the three major developing regions: Developing Africa, Developing Latin America and the Caribbean, and Developing Asia.[57] The key findings in table 4.1 are:

1. Overall, South–South trade is rising rapidly. Merchandise trade quadrupled from 2000 to 2010, rising from US$831 bn to US$3,524 bn. Over the same period, merchandise exports from the three developing regions to the developed economies increased much less, by just under 2½ times.

2. As a result of these differential growth rates, the share of South–North exports in the total exports from the three regions taken together fell from 61 per cent in 2000 to 47 per cent in 2010.[58]

3. This shift in the direction of trade away from Northern markets was seen across all three developing regions and to very similar degrees. Across the three regions, exports to the developing regions grew between 300 and 367 per cent, while exports to the North grew between 136 and 167 per cent.

4. The nature of South–South trade in Asia is very different from the other two regions. Overall, Asia's exports account for the dominant share of total Southern exports. Out of total South–South trade of US$3,524 bn in 2010, US$2,941 bn (83 per cent of the total) consisted of exports from Developing Asian economies. Of this, the overwhelming share (US$2,577 bn) was intra-regional trade in Asia. In other words, 73 per cent of all South–South trade in 2010 was intra-regional trade in Developing Asia. Most of this trade is in East Asia and manufactures and it has been driven by regional production sharing and intra-industry trade in electrical and mechanical machinery (Humphrey and Schmitz 2008). UN sources note that "[in] 2008, out of US$3.14 trillion in South–South trade, US$1.85 trillion was in manufactured goods, US$1 trillion in capital machinery and US$813 billion in fuels".[59] Any aggregate discussion of South–South trade is dominated by intra-regional trade in Asia.

54 Initially Brazil, Russia, India and China, but the country grouping now includes South Africa.

55 Calculated using purchasing power parity exchange rates.

56 See, for example, Bello (2007) on regional integration, trade and food security in ASEAN.

57 For the countries in these three categories, see 4.1.

58 Over the same period, 2000 to 2010, the OECD countries' share of global GDP at purchasing power parity exchange rates fell from 59.7% to 50.5% (OECD 2010: 24).

59 Original source, UN OHRLLS (2011: 10), referenced by Will (2011: 13).

***Table 4.1.** Merchandise flows from developing regions, 2000 and 2010*

Destination	Merchandise trade from Developing African economies				
	2000		2010		Index 2010
	US$ bn	% share	US$ bn	% share	(2000=100)
All developing regions	47	30	221	42	467
Africa	14	9	59	11	410
LAC and Asia	33	21	162	31	492
Developed economies	112	70	300	58	267
Total	160	100	521	100	327
Destination	Merchandise trade from Developing Latin American economies				
	2000		2010		Index 2010
	US$ bn	% share	US$ bn	% share	(2000=100)
All developing regions	90	24	362	39	400
LAC	64	17	171	18	267
Africa and Asia	26	7	191	20	723
Developed economies	291	76	576	61	198
Total	382	100	888	100	246
Destination	Merchandise trade from Developing Asian economies				
	2000		2010		
	US$ bn	% share	US$ bn	% share	
All developing regions	693	44	2,941	57	424
Asia	634	40	2,577	50	406
Africa and LAC	60	4	364	7	613
Developed economies	899	56	2,200	43	236
Total	1,593	100	5,141	100	309
Destination	Merchandise trade from all developing regions				
	2000		2010		Index 2010
	US$ bn	% share	US$ bn	% share	(2000=100)
South–South trade	831	39	3,524	53	424
Intra-regional trade	712	33	2,807	43	394
Extra-regional trade	119	6	717	11	604
Developed economies	1,303	61	3,075	47	236
Total	2,134	100	6,599	100	309

Source: UNCTADstat database, reports by importing countries.

5. In contrast, Developing Africa and Developing Latin America and the Caribbean (LAC) still continued to trade more with the North than with the South (58 and 61 per cent of all merchandise exports in 2010, respectively), and within South–South trade, extra-regional trade was much more important than intra-regional trade for Africa, while in Latin America the two trade flows were roughly balanced.

6. Extra-regional South–South trade has grown more rapidly than intra-regional South–South trade in all of the three developing regions.

As well as accounting for a substantial share of total South–South trade because of its high-level of intra-regional trade, Developing Asia has also become an important market for Af-

Table 4.2. Increases in exports by market, all merchandise, 2000–2010 (US$ billions)

	Increase in exports 2000–2010 (US$ billions)	Share of increase (%)	Exports 2010 (2000 = 100)
From Developing Africa			
Into Developing Asia	118	32.7	527
Into China	61.5	17.0	1,207
Into India	26.4	7.3	563
To rest of the South	55	15.3	383
To developed countries	188	52.0	267
Total	362	100	336
From Developing Americas			
Into Developing Asia	146	26.2	722
Into China	85.6	15.4	1,688
Into India	12.8	2.3	1,202
To rest of the South	126	22.7	288
To developed countries	284	51.1	198
Total	556	100	242

Source: UNCTADstat database, reports by importing countries.

rica and Latin America, with many analysts emphasizing the rapid growth of exports from these regions to Asia. Data on the growing importance of Developing Asia as an export destination for both Africa and Latin America in the period 2000 to 2010 is presented in table 4.2. This shows, first, that exports from the two regions to Developing Asia have been rising more rapidly than their exports to the rest of the South and to developed countries, as can be seen in the right-hand column of the table. Second, exports to China, in particular, grew very rapidly, increasing by a factor of 12 for Africa, and a factor of 17 for the Developing Americas. Exports to India grew much more slowly. Third, in spite of this rapid growth, table 4.2 shows that, in absolute terms, the developed countries not only continue to be important markets, but also account for substantial shares of the increase in exports in the period. Approximately half of all increases in exports from Africa and LAC in the period 2000 to 2010 went to the developed countries. The importance of developed countries as export destinations is likely to persist in the current decade. Even if the same rapid rates of growth of exports to Asia are projected forward to the period 2010–20, Asia will still absorb less than half the exports of both Developing Africa and LAC by 2020.

South–South trade in food

Overall, food[60] is only a small part of South–South trade. Total South–South trade is worth US$3.4 trillion, while the food component is worth US$238 billion, or 6.9 per cent of the total. However, South–South trade in food has expanded rapidly, rising from US$56bn in 2000 to US$238 bn in 2010, and increasing at very similar rates to merchandise trade as a whole. By 2010 South–South food exports were 34 per cent greater than South–North food exports.

For food, the dominance of intra-regional trade flows in Developing Asia is less marked than in the case of merchandise trade as a whole. Exports from Developing Asia account for half of total food exports from the three regions, and of this, intra-regional trade in Asia accounts for 60 per cent of exports. Table 4.3 shows that exports to developed countries still account for substantial shares of total food exports from the three regions (60 per cent of African exports, 48.5 per cent of Latin American exports and 36.7 per cent of Developing Asia food exports, respectively). Overall, South–North trade was substantially greater than extra-regional South–South trade. Nevertheless,

60 Food is defined here as comprising categories 0 (food and live animals), 1 (beverages and tobacco, 22 (oil seeds and oleaginous fruits) and 4 (animal and vegetable oils, fats and waxes) of the Standard International Trade Classification (SITC)

Table 4.3. Food exports by market, 2000 and 2010 (US$ billions)

	Food exports 2010 (US$ billions)	Share of food exports (%)	Increase in food exports (US$ billions) 2000–2010	Share of increase in food exports (%)
From Developing Africa				
Into Developing Asia	8.2	17.5	5.7	19.2
Into China	0.8	1.7	0.68	2.3
Into India	0.8	1.7	0.51	1.7
To rest of Developing Africa	10.2	21.8	7.5	25.2
To LAC	0.3	0.6	0.16	0.5
To developed countries	28.1	60.0	16.4	55.1
Total	46.8	100	29.8	100
From LAC				
Into Developing Asia	43.0	27.1	35.4	36.2
Into China	18.9	11.9	16.9	17.3
Into India	1.9	1.2	1.34	1.4
To Developing Africa	10.8	6.8	9.1	9.3
To rest of LAC	27.8	17.5	18.0	18.4
To developed countries	77.0	48.5	35.3	36.1
Total	158.6	100	97.8	100
From Asia				
To rest of Developing Asia	120.0	55.5	89.4	61.7
Into China	12.2	5.6	10.5	7.2
Into India	7.5	3.5	5.7	3.9
To Developing Africa	13.5	6.2	10.8	7.5
To LAC	3.4	1.6	2.7	1.9
To developed countries	79.5	36.7	42.0	29.0
Total	216.4	100	144.9	100

Source: UNCTADstat database, reports by importing countries.

South–South food trade did increase rapidly between 2000 and 2010, and in particular trade from Latin America to Asia. From 2000 to 2010, the increases in food exports to Developing Asia and to the developed economies were almost exactly the same. About half of Latin America's increased exports to Asia went to China. The increase in food exports from Latin America to China alone was almost as great as the increase in intra-regional trade within Latin America, and it exceeded the increase in China's imports from Developing Asia.

South–South trade in food should continue to grow more rapidly than South–North trade, and there are good prospects for exports to the BRICs and other rapidly growing Southern economies (Cairns and Meilke 2012). The combination of population growth and rapid economic growth will increase demand for food, and this will drive food imports up. Data on food imports into the BRICs and the "Next 11" countries[61] for the period 1990 to 2009 suggests that for every 1 per cent increase in income, food imports will rise by between 0.7 and 1.3 per cent across a broad range of rapidly growing and large developing countries (Fan and Boyd 2009).

However, demand from the fast growing Asian economies is not the only source of demand for developing country food exports. For Africa, in particular, both intra-regional trade and exports to developed countries are substantially more important than extra-regional South–South trade, as can be seen in table 4.3. Within Africa, there is a policy push for increasing intra-regional trade in food for a variety of reasons, including food security, achieving economies of scale and being able to respond to localized impacts of climate change. Pillar 2 of the Comprehensive African Agricultural Development Programme (CAADP)[62] focuses on market access and aims to create "the required regulatory and policy framework to facilitate the emergence of regional economic spaces that will spur the ex-

61 In 2005, Goldman Sachs followed up its BRIC classification with a further list of 11 countries whose population size and economic development would lead them to have a substantial impact on the global economy. This "next 11" list consisted of Bangladesh, Egypt, Indonesia, Iran, Republic of Korea, Mexico, Nigeria, Pakistan, Philippines, Turkey and Viet Nam.

62 The CAADP is a programme of The New Partnership for Africa's Development—which, in turn, is a programme of the African Union—and, in its own words, is an Africa-owned and Africa-led initiative working to improve food security, nutrition and agricultural productivity on the continent

***Box 4.2.** Drivers of food trade in Africa*

"Opportunities in domestic and regional markets. Demand in Africa's urban and regional markets is expected to grow from its current US$50 billion to US$150 billion over the next 25 years. Furthermore, regional trade and integration of cross-border markets can significantly help stabilize supplies in local food markets. The CAADP agenda will therefore involve working with Regional Economic Communities (RECs) and their member countries to (1) eliminate barriers and disincentives to trade in local and cross-border markets; (2) scale up existing efforts to modernize regional trading systems and facilitate cross-border trade; and (3) treat regional trade and market development as a key criterion in infrastructure development strategies.

Opportunities in emerging export markets. Most of the growth in foreign demand for Africa's agricultural exports will take place in the emerging economies of Asia and Latin America, many of which apply high tariffs to African exports. Furthermore, changes in production, labor markets, and demand conditions will increase costs and partnerships between Africa's agribusiness sector and agribusiness operators in these countries; (2) reflect market and production trends in these countries in national agricultural development strategies; and (3) work toward establishing trade agreements with China, India, and other leading emerging economies. [...]

Regional markets and potential for cross-border trade. Several promising efforts to facilitate domestic and regional trade in agricultural commodities are under way at the regional and country levels. To build on these strengths and boost domestic and cross-border trade, the CAADP agenda will include (1) the modernization and harmonization of standards, norms, and grades across national markets; and (2) the promotion of modern trading systems, including the development of regional and national commodity exchanges."

Source: CAADP (2009: 2–3)

pansion of regional trade and cross-country investments". It has emphasized the potential for expanding food trade intra-regionally as well as extra-regionally, as can be seen in Box 4.2, even though the trade data suggest that export markets in Developing Asia and Latin America will be difficult to access. The promotion of intra-regional trade within Africa will also require obstacles to be overcome, first various studies have noted the ways in which governments obstruct regional integration processes as they pursue national priorities and interests (see, for example, Afun-Ogidan et al. 2012). Second, to the extent that countries involved in intraregional trade may share the same climate and the same threats to plant and/or animal health, importing countries from within the region may be more stringent with respect to disease control than countries less at risk.

The impact of standards on South–South food trade

South–South trade in food is expanding rapidly. What impacts do Sanitary and Phytosanitary (SPS) measures have on the growth of this trade, and what needs to be done to further facilitate this trade? SPS measures are particularly important for food trade, and they are often cited as substantial barriers to trade for exporters from developing countries. Box 4.3 shows the results of a pilot study on non-tariff measures (NTMs) by the International Trade Center (ITC) that emphasizes the importance of certification, labelling, traceability and residues. All of these issues apply to trade in food. In addition to public regulations relating to technical standards and food safety, concerns have also been expressed about the role of private, company-developed standards in limiting the access of developing countries to food markets in developed countries, with the issue being raised by a number of countries at the WTO (WTO 2007) and elsewhere (ISO 2010; Codex Alimentarius Commission 2010).

In the light of these issues, mostly raised in the context of South–North trade, it is sometimes suggested that they are less prevalent for South–South trade for two reasons. First, the challenge for exporters is not the existence of SPS measures, but rather the gap between practices in domestic markets and those required for export markets: the bigger the gap, the greater the cost of turning toward export markets. It might be surmised that the differences in regulations are greater between developed and developing countries than among developing countries. Second, the growth of private standards for food in developed countries is related, in part, to the increasing stringency of public regulations (as argued by Henson and Humphrey 2009). In response to increasing stringency, companies develop private standards as a means of decreasing the risk of infractions through specifying and enforcing Good Agricultural Practices. Equally, these standards respond to consumer preferences in respect of both food safety and concerns about other characteristics of food production systems, such as social and environmental impacts. Such concerns may be less evident in developing country markets.

Public regulations and South–South food trade

Tariff levels are higher for South–South trade than for other forms of trade (OECD 2006), but it is frequently argued that non-tariff measures, and SPS measures in particular, are more stringent for South–North trade. In addition to long-standing restrictions on trade in food of animal origin, mostly related to animal health requirements, there has been a marked increase in the stringency of SPS controls imposed by developed countries on imports of food of non-animal origin. This has been largely driven by domestic food safety concerns. The European Union has expanded its requirements with respect to pesticide

***Box 4.3.** Results of ITC pilot study on NTMs*

"The survey found that 72% of all companies questioned in six developing countries reported concerns about technical measures. Many of these concerns related to mandatory quality standards about product characteristics or associated production processes. The most burdensome requirements for exporters were:

- Compliance with certification requirements (20%)
- Labelling, marking and packaging requirements (12%)
- Traceability requirements (9%)
- Tolerance limits for residues and contaminants or restricted use of certain substances (8%)"

Source: http://www.intracen.org/policy/non-tariff-measures/

residues and food hygiene.[63] More recently, the passing of the FDA Food Safety Modernization Act (FSMA) in the United States is likely to substantially increase the burden on importers to show that food imports are safe and will extend the scope of controls over food production, harvesting and processing (Humphrey 2012). By identifying certain fresh fruit and vegetable products that have the potential to cause "serious adverse health consequences or death" (United States Congress 2010: Section 105), the Act extends the use of controls over processing plants and farm practices to these products. The Act will promote the use of third-party certification for food processing plants in exporting countries as a means of establishing the safety of food imported into the United States.

These considerations suggest four reasons for the gap between domestic SPS requirements and measures on the one hand and those in export markets on the other hand being lower for South–South trade than for South–North trade. First, if the increased stringency of regulations affecting South–North trade derives from domestic considerations in developed countries and rising consumer concerns about food and health in these countries, trade between Southern economies might be less subject to such controls because consumer awareness about food safety and domestic food safety systems are, in general, less developed. Second, one of the criticisms of developed country controls on food safety is that they are not appropriate for agricultural conditions or production systems in developing countries. To the extent that the level of dissimilarity in agricultural conditions or production systems between Southern countries is less, then import requirements for Southern countries should be more appropriate to exporters from the South. Third, the capacity of Southern countries to enforce regulations through border inspections may be more limited than for Northern countries, even when the regulations themselves may be equally strict. Fourth, processes of South–South regional integration should lead to harmonization of standards and, therefore, reduce their role as barriers to trade.

There are, however, important counter-arguments and counter-evidence. First, there are increasing concerns expressed by consumers in developing countries about food safety. Food safety scares and evident damage to human health have affected consumers in the South. In some of the fastest growing markets for food exports from the South, such as China, food safety is a high-profile issue. More generally, food retailers catering to more affluent consumers in the rapidly growing economies of the South are following the same trend toward emphasizing food safety as one of the factors for attracting consumers. This is evident from the study of Brazilian supermarkets discussed later in this section. Further, as the gaps in levels of income and food safety capacities widen among developing countries, barriers to trade may increase. For example, developed country controls on levels of aflatoxins in maize and nuts have long been criticized (Otsuki et al. 2001), but South Africa's regulations on maximum levels of aflatoxins are stricter than in many developed countries because it is believed that a combination of Hepatitis A prevalence and high consumption of peanut butter by the poor creates particular health risks (Achterbosch 2005: 166). These controls greatly restrict the potential for Mozambique to export nuts to South Africa as the former country does not have the capacity to control aflatoxin levels in nuts.

Second, plant and animal health issues are also important for developing countries that import food. Many of these importing countries have large agriculture sectors and are themselves substantial food exporters, so they will be concerned about the risks posed by food imports to plant and animal health. They will take steps to safeguard on plant health, not only to maintain the integrity and competitiveness of their domestic industries, but also to ensure that they are able to export food products to other countries. In other words, there is little reason to believe that developing countries are less concerned about controlling these risks than are developed countries. The evidence from South Africa cited in this volume suggests that controls can be stringent in order to protect domestic industries. Similar, phytosanitary risks have impacts on trade in Asia. For example, exports of papaya and pineapples from Malaysia to China are made possible by agreements that specify acceptable treatments of fruit to eliminate disease, backed up by inspections and audits. The pre-export treatments and supervisory mechanisms are very similar to those required by some developed countries that have domestic industries to safeguard (see the case study in section 4.2).

63 See for example, EC/DG SANCO (2008) on pesticides, and CEC (2004a; 2004b; 2004c) on food safety regulations.

Third, exporters to Southern economies also face problems arising from non-compliance (on the part of the importing country) with SPS principles such as non-discrimination between imported and domestic produce and producers, transparency of rules and regulations, proportionality and equivalence (as laid out in the WTO Agreement on the Application of SPS Measures, for example). The case studies on Africa, Asia and Latin America presented in the next section all point to problems for exporters. The analysis of standards and food imports into South Africa in this chapter points to the challenges posed by public regulations for African exporters of food products:

"Additional issues in the management of standards raise market entry barriers for regional exporters. These include costly requirements on testing procedures (Swazi meat exporters having to fly samples to South Africa), burdensome documentation (additional documents and surveys required from Zambia's honey exporters), difficult access to information (Zimbabwean exporters not having information on packaging requirements)."

Similarly, the study of trade between Argentina and Brazil refers to arbitrariness in Brazilian treatment of imports from Argentina, attributing this in one case to retaliation against Argentina for its own import restrictions. Finally, the case study on Asia points to various instances of inconsistencies in the application of import controls.

Some of these issues could be mitigated through regional integration initiatives. Greater harmonization of standards and controls has certainly been the objective of such initiatives, but various studies suggest that national interests slow down the development of common standards, and that progress has been limited in Mercosur[64] and ASEAN.[65] Similarly, analysis of initiatives being undertaken by the RECs in sub-Saharan Africa emphasize the substantial gap between agreements in principle to harmonize SPS standards and actual implementation (Jensen et al. 2010: 3; Tschirley 2010: 15; BMZ 2012: 29). The impact of these initiatives needs further study. However, while such initiatives will reduce some obstacles to trade, they will not necessarily be sufficient to promote increased trade. The evidence from South Africa presented later in this chapter highlights that imports from the rest of Africa have been growing slowly compared to those from all other parts of the world. The rapid growth of food imports into South Africa from Asia and Latin America shows that market demand exists. The relatively slow growth of imports from sub-Saharan Africa could indicate continuing problems with standards compliance, but it is equally or more likely to indicate a continuing lack of competitiveness and a failure to produce the products that the South African market is demanding. Similarly, studies of non-tariff measures in Africa highlight a range of factors that goes well beyond issues relating to standards and compliance. One report on non-tariff measures and trade in East Africa laid great emphasis on costs relating to corruption, road tolls and roadblocks, which substantially increased costs (ASARECA n.d.). Addressing deficiencies in SPS infrastructure and harmonizing standards will not, by themselves, guarantee that African exporters will recover the market share they have lost in the past decade.

Private standards

The use of standards and certification schemes developed by private companies, coalitions of companies and multi-stakeholder coalitions has expanded rapidly in recent years. Such schemes have been identified by some countries as potential barriers to trade in discussions at the WTO (WTO 2007). The range of issues covered by such standards is broad, and may include sustainability, environmental impact, social issues and animal welfare. However, particular attention is being given to food safety standards for fruit and vegetables because developing country exports of these products have grown significantly, and because such standards have been extensively adopted by supermarkets in Europe. These standards and related certification/labelling schemes can act as barriers to trade, although it has also been argued that they drive up efficiency and promote sustainable farming practices in developing countries (Jaffee and Masakure 2005; Jaffee et al. 2011). While such schemes are not mandatory or legally binding, once they are adopted by significant numbers of large buyers they become a prerequisite for accessing substantial segments of important export markets.

These standards have developed in response to two factors. The first is the changing legal environment for food safety whereby responsibilities are placed on private firms to ensure that food is safe (Henson and Humphrey 2009). The second is increasing consumer awareness of issues involved in the quality of food, how it is produced and the broader impacts of food production systems. While some standards and labels provide assurances to customers about basic food safety, others act as product differentiators, making claims to consumers about such food characteristics as place of origin, environmental sustainability, benefits for small farmers and labor practices. These standards are adopted very unevenly in developed country markets. Even within the European Union, they are more prevalent in Northern European countries than in Mediterranean countries or Eastern Europe.

Do such private standards also affect South–South trade? With the transformation of retailing systems in developing countries (Reardon et al. 2003) and the emergence of consumers who will pay more for safe food, retailers in developing countries have begun to use food safety as one of their marketing strategies. The case studies which follow highlight the role of supermarkets in Brazil and South Africa in adopting more stringent requirements for suppliers. These requirements are not necessarily expressed in the form of food safety standards based on third-party certification, but when buyers demand that certain food safety procedures are adopted and verify compliance through direct or third-party inspection, the resulting impact on suppliers is very similar to that seen in the case of private, third-party certified standards schemes. Generally speaking,

64 Mercosur (abbreviation for the Spanish "Mercado Común del Sur" or Common Market of the South) is an economic and political agreement aiming at promoting trade and regional integration among its signatories which include Argentina and Brazil in addition to Paraguay, Uruguay, and Venezuela (joined Mercosur in 2012).
65 ASEAN is the Association of Southeast Asian Nations that has ten member states: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.

larger suppliers are more able to implement control systems and demonstrate compliance with buyer requirements.

Overall, consumers in these markets are likely to be more price conscious than Northern consumers, with the only exceptions being large cities in rapidly growing economies (such as Shanghai, Beijing and São Paulo) where affluent consumers will be present in sufficient numbers to create high-value markets. This is why it is frequently claimed that the barriers posed by private standards are not as strong in Southern countries as in some Northern countries.

However, two caveats are in order. First, retailers and food processing companies are not the only drivers of these types of standards. Second, such standards may facilitate rather than obstruct trade. Standards schemes based on third-party certification have been promoted by governments in developing countries. In Mexico, the México Calidad Suprema (MCS) scheme, sponsored by government entities—the Economics Ministry, the Bank of Mexico and the Ministry of Agriculture and Rural Development—was first established in 1999 as a voluntary scheme aimed predominantly at production for the domestic market (van der Valk and van der Roest 2008). Between 2004 and 2008, MCS was benchmarked to the GlobalGAP standard to facilitate access of Mexican producers to export markets (Villegas 2006). In other words, the MCS scheme is designed to facilitate trade, and is promoted by the government with both this aim in mind and the broader goal of providing confidence to domestic consumers. The scheme is enforced through private sector certification.

However, government standards do not have to be based on certification. Standards that define Good Agricultural Practices (GAP) may also be presented as models for voluntary adoption by farmers as part of programmes to improve the safety and quality of food. The Malaysian government developed the SALM standard[66] for GAP in 2005. While SALM adopts many of the elements of the GlobalGAP standard (Department of Agriculture 2005), it is not enforced through audit and certification. It remains a set of recommendations to farmers (see case study in section 4.2). In this respect, it is similar to the long-established guidelines for GAP established by the US Food and Drugs Administration (US Food and Drug Administration 1998).

In the ASEAN region, the proliferation of standards for GAP that are largely sponsored by government agencies (as described by Ledger et al. 2006: 524) has led to the development of the ASEAN GAP initiative.[67] This is not an attempt to develop a single scheme for GAP that would audit and certify farms right across the region. Rather, ASEAN GAP is "an umbrella standard that individual member countries [of ASEAN] will benchmark their national programmes against to gain equivalence" (Ledger et al. 2006: 524). This should facilitate trade in those products that are covered by the GAP by establishing a common standard. However, to achieve this goal, the standard must have credible means of demonstrating farmers' compliance with it. This is the role of audit and certification. If credible, it allows countries in the region to accept certification as an indicator of product quality (also of foreign products) and to adjust border controls accordingly.

The ASEAN GAP project indicates that there is scope for developing audit and certification schemes, owned by public institutions or private actors that facilitate trade. In the face of concerns about food safety, such as those that led to the introduction of the FDA Food Safety Modernization Act in the United States, certification-based approaches to food safety may be a promoter of South–South trade rather than an obstacle to its growth.

Conclusions

There is no doubt that South–South trade is expanding rapidly, and even when the predominant influence of intra-regional trade in East Asia is taken into account, intra-regional and extra-regional South–South trade presents opportunities for exporters in all developing regions. South–South trade in food has expanded along with trade in general, although it is clear that Latin America is particularly well placed to take advantage of opportunities in global food markets. South–South trade in food is certainly growing more rapidly than South–North trade, but it would be wrong to attribute this to a more favorable standards and compliance environment. Many of the challenges facing exporters from the South as they target Northern export markets also arise when Southern markets are targeted.

Southern economies have every reason to develop and maintain stringent controls with respect to food safety and plant and animal health. Major exporters of food products need to protect plant and animal health, as well as consumer health. Furthermore, as incomes rise in the most rapidly expanding Southern markets, consumers will become more discriminating and demand safer food. Finally, regional integration initiatives should facilitate the growth of intra-regional trade in food, but the economies of sub-Saharan Africa in particular will not benefit fully from opportunities within the region unless they can compete against exporting countries in Asia and Latin America that have been investing heavily in agricultural systems and increasing both value-added and overall competitiveness.

4.2. The role of standards in South–South food trade: Case studies from three continents

Case study 1: Standards and trade patterns in the South African agrifood sector[68]

Public standards in the South African agrifood sector

South Africa represents a potentially important market for African agrifood exporters. Population growth, rising income

66 ALM stands for "Skim Akreditasi Ladang Malaysia" or Malaysian Farm Accreditation Scheme.

67 For an outline of the ASEAN GAP standard, see ASEAN Secretariat (2006).

68 F This case study was contributed by Dr. Judith Fessehaie, Research Associate at the Policy Research in International Services and Manufacturing (PRISM) unit, University of Cape Town.

levels and an ageing population age are driving increased demand for both staple and processed foods. In particular the expansion of the middle class is shifting demand to higher-value processed foods and protein-rich and higher fat content food. In the fresh produce category, this is also increasing demand for off-season and counter-season fresh products and for specialist products, albeit these still represent a small share of the market (ITC 2010).

While the South African agrifood market is fast growing and increasingly import intensive, it is also tightly regulated by standards. The standard-setting function in South Africa rests with a plurality of institutional actors: the National Regulator for Compulsory Specifications (within the Department of Trade and Industry), the Ministry of Health, and various departments within the Ministry of Agriculture. These bodies manage a wide range of technical regulations covering product-related standards, such as product quality and composition, packaging and labelling, and process-related standards, such as the application of hazard controls and HACCP system, maximum residue levels for pesticides, and microbiological specifications.[69]

These standards create high-entry barriers for regional exporting countries for two reasons. First, South Africa's legislation is based on the WTO TBT and SPS Agreements. Compulsory and voluntary standards adopted by national institutions therefore are based on the standards and guidelines set by the Codex Alimentarius Commission, the World Organization for Animal Health (OIE), and the International Plant Protection Convention (IPPC). As a result, an African exporter targeting the South African market has to meet standards that are as stringent as those adopted by Northern countries. For example, an exporter of processed food must meet standards based on Good Manufacturing Practices (GMP) and Good Hygiene Practices, which are international standards, and an exporter of fresh produce must comply with Maximum Residue Levels (MRL, e.g. for agricultural chemicals or pesticides) adopted from European standards (Morris and Morris 2010).

Second, the existence of multiple standards-setting bodies makes it difficult for exporters to access all the required information to ensure compliance. As this is a problem common to domestic producers, the South African government has recently tried to centralize and rationalize the institutional framework. This initiative, however, focuses on local producers, not exporters from the African region.

The lead buyers for agrifood products in South Africa are food processors and retailers. In the case of the processing industry, demand for imports from companies in South Africa is limited. The industry is highly concentrated in few large companies, well integrated backward and forward. Most of its supplies are sourced locally, and imports are limited to few intermediate products; for example, dried legumes imported by canners and packers, and apple juices imported by fruit juices manufacturers.

With respect to South Africa's retail sector, five retail chains dominate: Shoprite, Spar, Pick n Pay, Woolworths, and Masscash, which together represent more than 60 per cent of food retail sales in the formal sector. They largely target low-income consumers, but they are moving to serve middle-income consumers as well. Most demand of fresh produce from large and small retailers is met by local producers. For example, the largest importer in the retail sector only imports 10 per cent of its requirement. Although imports of fresh produce are limited, retailers are increasingly resorting to imports for processed foods, to meet the growing demand from middle-income consumers.

According to the Consumer Protection Act, signed into law in 2009 and entered into force since 2011, all firms in the agrifood value chain, from suppliers to retailers, are liable in case of a health/safety accident. The Act imposes strict liability on retailers, in the same way that the Food Safety Act did in the UK in 1990. Following the due diligence defense clause provided for in the Act, retailers have reorganized their supply chains, imposing stringent standard compliance and certification requirements on their suppliers. By doing so, firms aim to demonstrate that they have taken all reasonably practicable steps to avoid breaching food safety regulations. Standards adopted by large retailers are set at the international level. For most buyers, compliance to GlobalGAP standards is not negotiable, for example. Compliance to product- and process-related standards must be certified by accredited institutions, often international laboratories. Moreover, some retailers have moved to a centralization of supply chain management functions and direct auditing of each retailer's hygiene and food safety standards. This grants direct control of suppliers' standards compliance (B&M Analysts 2011).

The South African market is largely price-sensitive, with minimal room for credence goods. South African retailers do not adopt private standards based on social and environmental sustainability.[70] The organic products offer is expanding, but from a very low base so that this is still a niche market.

These requirements mean that for regional exporters, entry into the supply chain of large retailers is relatively difficult. Standards are based on global practices, and each retailer applies its own interpretation, guidelines and auditing procedures. Retailers demand high capabilities from exporters in terms of standards, logistics, etc. Exporters have to incur significant compliance costs to meet different retailer guidelines, irrespective of the size of the orders. Hence, supplying multiple buyers results in additional costs. To address the issue of multiple private standards, the Consumer Goods Council of South Africa, an industry association representing manufacturers and retailers, has established the Food Safety Initiative (FSI). This aims at harmonizing food safety auditing procedures by developing a single standard and centralizing auditing databases.[71] FSI has close ties to the Global Food

69 Key legislation include the Foodstuffs, Cosmetics and Disinfectants Act no.54 of 1972, and the National Health Act No.16 of 2000.

70 Two retailers have programmes on carbon footprint reduction and sustainable farming practices. This, however, does not translate into requirements for suppliers in exporting countries.

71 It also aims at creating a comprehensive information point on any food industry standard, advising on food safety and SPS matters, issuing risk alerts and labelling transgressions, and collaborating with national standards-setting bodies.

Safety Initiative (GFSI), although there is no formal agreement in place. FSI guidelines are aligned with GFSI, but it also has included national requirements, such as national technical regulations. It is currently working on implementing the Global Markets Capacity Building Programme audit throughout the South African industry.

At the same time, South African buyers do not generally engage in supplier development programmes. In 2008, in order to support GlobalGAP certification, South African certification bodies, retailers, exporters, producers and the chemical industry established a GlobalGAP National Technical Working Group. This initiative is, however, limited to domestic suppliers. South African retailers do not engage with African producers to upgrade their capabilities, but rather operate at arm's length.

Regional trade flows in the agrifood sector

Two orders of constraint are faced by regional exporters in supplying the South African market. The first is supply-side related. The South African retailer sector is demanding in terms of product quality and specification, volumes and consistency. In the region, African producers often lack access to capital, know-how and marketing channels. Second, their price competitiveness is hampered by high production and exchange rate fluctuations. Transportation costs also remain high. Comparing transportation costs across the globe, the World Bank estimates that in 2007 average transportation prices as US cents per ton per kilometer amount to USc2/tkm in Pakistan, 3.5 in Brazil, 6 for the Durban–Lusaka route, and 8 for the Mombasa–Kampala route (World Bank 2009).

South African public and private standards create an additional, significant entry barrier for exporters. Certification costs in the region are considerably higher than in South Africa itself because, in most cases, the National Quality Infrastructure is under-developed and under-resourced (see review of case studies in Kenya, Mozambique, Nigeria, South Africa, and Uganda in Wilson 2003). Testing and certification services have to be sourced from costly private international laboratories and certification bodies because national institutions are not internationally accredited. In particular, in order to export fresh produce, exporting countries need an inter-governmental agreement with South Africa on Pest Risk Assessment procedures.

***Table 4.4.** Examples of standards-related NTBs applied in South Africa (2007–2012)*

Exporter	Sector	Issue
Angola	General	South Africa requires that products that are not certified by certification bodies that are recognized by international accreditation bodies be re-tested by the South African Bureau of Standards
Malawi	Tobacco	In 2012, tobacco consignments shipped from Malawi to South Africa were held at the border because they failed to meet requirements regarding packaging. The tobacco was packed in hessian bags that, according to South Africa's legislation, require a Veterinary Import Permit and have to be fumigated. Exporters, however, complained that they obtained an import permit from South Africa after many years, and the permit did not specify any packaging requirement. The consignments were eventually released subject to strict requirements concerning the offloading procedures and disposal of the bags
Swaziland	Meat	South Africa requires that meat samples be tested by the Low Risk Laboratory in Pretoria for chemical residues. Swaziland exporters used to send the sample by road, but South Africa requires that samples are sent by air to O.R. Tambo airport in Johannesburg and has set more stringent inspection and document procedures at the border. When the sample is delivered too late, it has to stay overnight in Johannesburg before collection. This has increased costs and the risk of deterioration of the sample for Swaziland suppliers
Zambia	Coffee	Zambia's exports are restricted based on the level of Ochratoxins
Zambia	Beef and leather	Zambia's beef and leather exports are restricted because of poor standards in the abattoirs and lack of certification of Zambia as a Foot and Mouth Disease-free area
Zambia	Flowers and horticultural products	Quality assurance services are hampering cost-competitiveness of Zambia's exports. Exporters have to pay for services of internationally accredited certification bodies that are not available locally
Zambia	Organic honey	South Africa's irradiation requirements prevented for many years Zambia's honey exports. In 2008, under a World Bank mission, South Africa's National Department of Agriculture collected honey samples during a national disease survey. The analysis reported no trace of American Foulbrood Disease and this was notified to the WTO. In 2009, South Africa reported an outbreak of American Foulbrood to the WTO. Hence, it required Zambia's honey to be irradiated as a broad spectrum mitigation practice and additional documentation for a probabilistic risk assessment. The countries are still exchanging communication, but Zambia finds it difficult to comply promptly
Zambia	Labelling	South Africa requires that user instructions are provided in specified local languages
Zimbabwe, Namibia	Feed	In 2011, South African importers reported that because of delays at the Ministry of Agriculture, their application for renewal of Farm Feed Registration expired. Cotton oil-cake and meat and bone meal consignments could not be imported from Zimbabwe and Namibia, with domestic feed plants running out of stock. The Ministry renewed the license

Source: NTB database accessed from http://www.tradebarriers.org/

Table 4.5. South Africa's imports of agrifood products, by source region (selected years, US$)

Region	2000	2005	2011	Growth 2000–2005 (%)	Growth 2005–2011 (%)
Africa	70,520,374	101,703,617	188,103,955	44.2	85.0
Asia	271,866,265	637,992,842	1,698,336,111	134.7	166.2
Europe	351,756,953	543,501,234	1,691,161,573	54.5	211.2
Latin America and the Caribbean	135,503,938	526,612,724	909,132,208	288.6	72.6
North America	171,718,961	228,099,127	533,593,183	32.8	133.9
Rest of the world (ROW)	131,658,522	198,381,163	412,692,290	50.7	108.0
Total	1,133,025,013	2,236,290,707	5,433,019,320	97.4	142.9

Source: UN Comtrade database accessed in June 2012.

Note: Agrifood products include: meat, fish, and dairy products, fresh and processed vegetables and fruits, nuts, coffee, tea, spices, cereal products, edible oil, confectionery and beverages. For more details see footnote 74.

A review of the non-tariff barriers (NTBs) notified by regional trade partners in the context of the COMESA-EAC-SADC.[72] Tripartite Initiative between 2007 and 2012 shed light on some of these issues (table 4.4). Countries in the region reported as major entry barriers to South Africa the following: costly certification requirements, changes in standards without prior notice or consultation with trading partners, and difficult access to complete lists of import requirements. For example, South Africa changed regulations for meat imports, with negative cost implications for Swaziland exporters. The regulation requires not only that meat samples are re-tested at the Low Risk Laboratory in Pretoria for chemical residues, but also that samples are flown into O.R. Tambo Airport in Johannesburg. This increases the risk that sample delivery is delayed and samples deteriorate, raising testing costs for neighboring countries. In 2008, after many attempts, Zambia received donor support in complying with South African SPS requirements for organic honey, but soon after commencing exports additional documentation and irradiation were required. While measures by the South African authorities are often applied for legitimate reasons, the fact that these are listed in table 4.4 highlights that exporters in the region struggle to meet the requirements.

It is worth noting that the Southern Africa Development Community (SADC)—where South Africa is one of 15 member states—has a regional initiative in place to harmonize standards, conformity assessment and accreditation procedures.[73] In 2000, SADC adopted the Memorandum of Understanding on Standardization, Quality Assurance, Accreditation and Metrology (SQAM), which formed the basis for more binding instruments, the SADC SPS and TBT Annexes to the Trade Protocol adopted in 2008 with the objective of facilitating compliance with WTO obligations.[74] While they foresee the establishment of regional institutions to deal with conformity assessment and accreditation issues, most progress achieved so far is related to standards harmonization, with the adoption of common standards across the region. SADC members are now focusing on the other two components of the cooperation programme.

Regional trade data confirm the challenges of regional exporters in targeting the South African market. For the purpose of this analysis, South African imports of agrifood products have been defined as imports of chapters 02 to 22 of the Harmonized Commodity Description and Coding System (HS).[75] Table 4.5 shows the value and sources of South African agrifood im-

72 COMESA refers to the Common Market for Eastern and Southern Africa, EAC to the East African Community, and SADC to the Southern Africa Development Community.

73 Implementation of the SPS Annex revolved around setting up the regional structures to support implementation of WTO commitments. In the area of TBT, SADC member states commit to accept the equivalent technical regulations of other member states, even if these differ from their own regulations.

74 The Memorandum of Understanding establishes a formal framework for cooperation among the national institutions in Standardization, Quality Assurance, Accreditation and Metrology (SQAM). More information available at http://www.sadc.int/index/browse/page/168

75 The WTO Agreement on Agriculture covers HS chapters 01 to 24, plus selected tariff sub-headings in HS chapters 29, 33, 35, 38, 41, 43, 50, 51, 52, and 53. In this analysis, we have excluded the latter sub-headings as well as the following HS chapters entirely devoted to non-food products: HS 01—live animals, HS 06—live plants, HS 23—food waste, HS 24—tobacco.

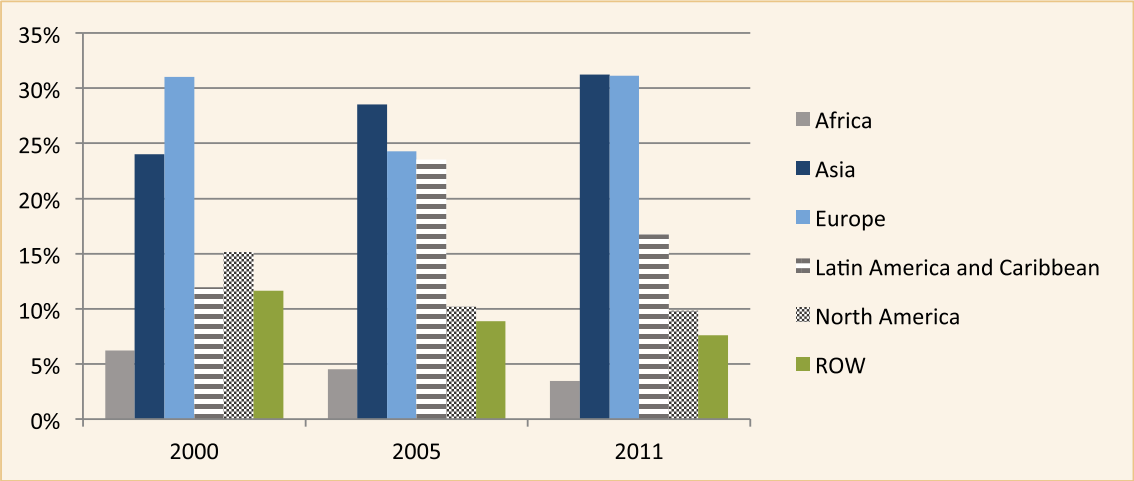
ports for selected years in the period 2000 to 2011. Overall, imports of agrifood products have grown significantly: by 97 per cent in the period 2000 to 2005, and by 143 per cent in the following 6 years.

While every region increased exports to South Africa, Africa has lagged behind (figure 4.1) and still accounts for a very small fraction of agrifood imports. South–South trade has increased, displacing imports from developed countries, but the main beneficiaries have been Asia and Latin America.

Asia's share in South Africa's agrifood imports has grown consistently, from 24 per cent in 2000 to 31 per cent in 2011. The bulk of agrifood imports from Asia is sourced from China, India, Indonesia, Malaysia and Thailand (together accounting for 90 per cent of imports from Asia in 2011). Latin America's export share growth has been more erratic: from 12 per cent in 2000 to 24 per cent in 2005, but falling to 17 per cent in 2011. The major sources of imports are Argentina and Brazil. In contrast, Africa's share in South African agrifood imports experienced a decisive decline: from 6 per cent of total imports in 2000 to 3 per cent in 2011 (see figure 4.1).

African exports to South Africa are dispersed across, on average, 40 countries, but agrifood imports are mainly sourced from the Southern African region (see Table 4.6). This is imput-

Figure 4.1. *South African imports of agrifood products, by source region (selected years, % of total)*



Source: UN Comtrade database accessed in June 2012.

Note: AgrifoNote: Agrifood products include: meat, fish, and dairy products, fresh and processed vegetables and fruits, nuts, coffee, tea, spices, cereal products, edible oil, confectionery, and beverages.

Table 4.6. *Top-20 regional sources of agrifood imports into South Africa (2011)*

Country	Value of exports (US$)	% share of Africa's exports	Country	Value of exports (US$)	% share of Africa's exports
Mozambique	38,098,889	20.3	Ethiopia	5,460,758	2.9
Malawi	33,129,884	17.6	Nigeria	2,820,939	1.5
Zimbabwe	23,151,618	12.3	Morocco	2,800,271	1.5
Zambia	20,593,611	10.9	Uganda	2,265,304	1.2
Tanzania	14,348,272	7.6	Madagascar	1,495,032	0.8
Côte d'Ivoire	10,834,368	5.8	Comoros	830,290	0.4
Egypt	9,805,683	5.2	Tunisia	512,761	0.3
Kenya	7,997,613	4.3	Rwanda	476,114	0.3
Ghana	6,257,800	3.3	Burundi	350,876	0.2
Mauritius	6,183,200	3.3	Gambia	136,209	0.1

Source: UN Comtrade database accessed in June 2012.

Table 4.7. Top agrifood import into South Africa, by product and source (2011)

HS code	Source	Exports value (US$)
H3–090240 Tea, black (fermented) and partly fermented tea, whether/not flavored, in immediate packings of a content >3kg	Malawi	22,409,220
H3–100590 Maize (corn), other than seed	Zambia	12,353,209
H3–080300 Bananas, incl. plantains, fresh/dried	Mozambique	11,682,770
H3–180310 Cocoa paste, not defatted	Côte d'Ivoire	10,553,844
H3–170310 Cane molasses	Mozambique	10,043,772
H3–220710 Undenatured ethyl alcohol of an alcoholic strength by volume of 80% vol.	Zimbabwe	6,834,315
H3–120220 Ground-nuts, not roasted/otherwise cooked, shelled, whether/not broken	Malawi	6,400,899
H3–090240 Tea, black (fermented) and partly fermented tea, whether/not flavored, in immediate packings of a content >3kg	Tanzania	5,796,323
H3–180310 Cocoa paste, not defatted	Ghana	5,686,829
H3–090240 Tea, black (fermented) and partly fermented tea, whether/not flavored, in immediate packings of a content >3kg	Zimbabwe	4,361,544
H3–080132 Cashew nuts, shelled	Mozambique	4,156,417
H3–200410 Potatoes, prepared/preserved otherwise than by vinegar/acetic acid, frozen, other than products of 20.06	Egypt	4,034,512
H3–151190 Palm oil, other than crude, and fractions thereof, whether/not refined but not chemically modified	Mauritius	3,887,880
H3–170310 Cane molasses	Tanzania	3,654,736
H3–090111 Coffee, not roasted, not decaffeinated	Tanzania	3,432,832

Source: UN Comtrade database accessed in June 2012.

able to lower transport costs and the existence of preferential trade and trade facilitation agreements, rather than cooperation in the SPS and TBT areas. In fact, because cooperation in testing and certification procedures lags behind, the main hurdle for African agrifood exporters has not been tackled yet.

Comparing agrifood imports from Africa with those from Asia and Latin America at the 6-digit level, significant differences can be identified. South African imports from Asia are well diversified and include rice (Thailand, India), palm oil (Malaysia, Indonesia), beans (China), and fish (both prepared/preserved and frozen). They also include inputs to the food and beverage industry (cocoa butter and paste, apple juice, various food preparations) and final products (bakery products, pasta, sugar confectionery).[76] Asia's export success in expanding its export volume and deepening the value-added content of its exports dates back to the 1970s. In that decade, Asian countries adopted policies to develop natural resource-based industries. These policies aimed at increasing agricultural productivity, and included government support to processing industries by, among other things, facilitating access to capital, technology, skills and R&D. Countries such as Malaysia and Thailand based their industrialization process on natural resources processing before export-oriented consumer goods sectors took over in the 1980s (Reinhardt 2000).

By contrast, imports from Latin America into South Africa are concentrated in a small number of commodities: grains (wheat, rice, millet), frozen meat (bovine, swine), edible oils (sunflower, soya bean, and cotton seeds oils), and sugar. Similarly, the main agrifood imports from Africa are concentrated in unprocessed or semi-processed commodities: tea, coffee, grains, nuts, cocoa paste, and cane molasses (table 4.7). These products are mostly affected by public standards, and private standards developed by individual retailers rarely apply. Fresh produce imports are very limited: bananas from Mozambique, grapes from Egypt, peas, cauliflowers, asparagus and carrots from Kenya, beans from Zambia. In total, fresh produce accounted for 10 per cent of African countries' exports to South Africa in 2011. It is quite likely that these products are supplied by exporters already in compliance with EU SPS requirements.

Conclusion

Because of rising income levels and an ageing population, South Africa's agrifood domestic market is fast growing and presents sizeable opportunities for African exporters. As consumer demand shifts to off-season and counter-season fresh produce and higher-processed food products, South African retailers have increasingly resorted to imports.

However, the major beneficiaries of the expansion of South Africa's agrifood imports have been suppliers in Asia and Latin America. Conversely, Africa's export growth to South Africa has taken place from very low levels, and indeed its share has

76 Imports from Europe are also diversified: they include alcoholic beverages (almost a quarter of imports from Europe), soya bean oil, wheat, frozen meat (swine, poultry), and a large variety of finished food products.

Table 4.8. Fruit and vegetables trade flows within Mercosur in 2011 (1,000 US$)

		To			
		Brazil	Argentina	Paraguay	Uruguay
From	Brazil	–	16,135	358	13,356
	Argentina	628,900	–	6,917	11,880
	Paraguay	2,203	3,585	–	7
	Uruguay	755	273	–	–

Source: Data from Aliceweb Mercosul 2012.

declined relative to other regions. Exports are confined to unprocessed or semi-processed commodities from the Southern African region. This reflects Africa's lack of competitiveness in exporting both processed commodities and fresh produce. Commodity processing usually requires good access to capital, skills, technologies and infrastructure, and fresh produce exports require a very efficient cold supply chain.

Standards play a critical role in explaining the poor performance of African exports into South Africa. Both South Africa's public institutions and private retailers adopt standards based on very stringent global practices. Exporters from the region generally struggle to meet these same standards in Northern countries. For example, to export to South Africa, suppliers have to meet Minimum Residue Levels requirements equivalent to the ones set by the EU. Even when exporters from the region meet these requirements, the certification process puts them at a cost disadvantage compared to competitors. As their National Quality Infrastructure is poor, exporters would need to use international laboratories and certification bodies, or the South African ones. It is no surprise that the only fresh produce entering South Africa from the region originates from the same countries, indeed probably the same producers, that also export to the EU market, hence with low marginal costs in meeting South African standards.

Other issues in the management of standards additionally raise market entry barriers for regional exporters. These include costly requirements on testing procedures (e.g. Swazi meat exporters having to fly samples to South Africa), burdensome documentation (e.g. additional documents and surveys required from Zambia's honey exporters), and difficult access to information (e.g. Zimbabwean exporters not having information on packaging requirements).

Entry barriers to the South African market, therefore, remain high on multiple fronts and lock out African exporters. While South–South trade has benefited from South Africa's economic growth, this has not had a radical impact on regional trade patterns. To unlock Africa's export potential, important steps need to be taken at national and regional level. At national level, African countries need to build export competitiveness, including by strengthening their National Quality Infrastructure. South Africa's management of SPS measures can assist African exporters by improving consultative mechanisms and prior notification to countries impacted upon by new measures, possibly with a view to find mutually satisfactory solutions. At regional level, cooperation on compliance and accreditation mechanisms would go a long way in assisting African exporters, but this process must be complemented with adequate political support and funding, including from cooperating partners.

Case Study 2: Public and private standards in the Brazilian and EU markets: aspects that influence upon fresh fruit and vegetable exports from Argentina[77]

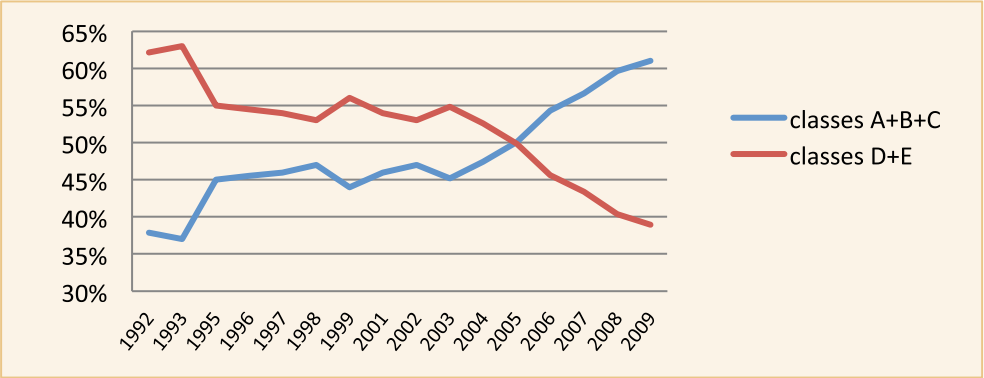
Introduction

This case study examines how public and private standards affect imports of fresh fruit and vegetable products[78] into the European Union (EU) and within Mercosur. Trade flows for fruit and vegetables among the Mercosur countries have increased considerably in the last 5 years. Within this, exports from Argentina to Brazil stand out as far exceeding all other flows within the region (table 4.8).

77 This case study was authored by John Wilkinson, André L. Funcke and Paulo R. F. Pereira of the Núcleo de Pesquisa "Mercado Redes e Valores", Centro de Pós-Graduação em Desenvolvimento, Agricultura e Sociedade (CPDA), Federal Rural University of Rio de Janeiro.

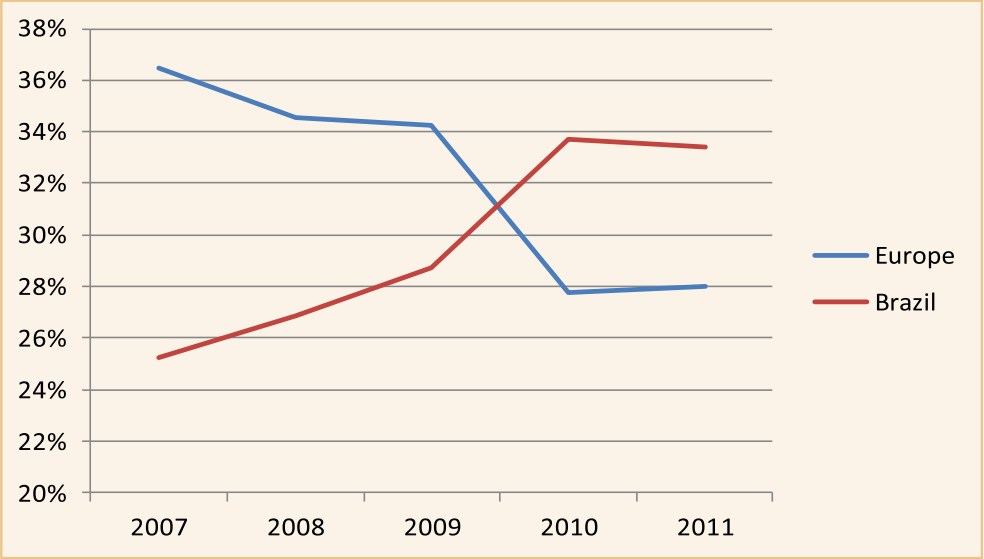
78 In the data presented here, fruit and vegetables are defined as comprising chapters 07 (vegetables) and 08 (fruit) of the Harmonized Commodity Description and Coding System (HS).

Figure 4.2. Evolution of social classes in Brazil (% of population)



Source: Wilkinson et al. (2012).

Figure 4.3. Percentage of Argentinean pear and apple exports to Brazil and Europe over total amount exported



Source: elaborated by authors based on Aliceweb data, 2012

Both Argentina and Brazil are traditional food exporters. They have substantial trade with each other and, in addition, also export many food products to European countries. While, however, Argentina exported US$628.9 million to Brazil representing 30.1 per cent of its overall fruit and vegetable exports, Brazil exported only US$16.1 million to Argentina accounting for no more than 1.7 per cent of its total fruit and vegetables exports. We, therefore, concentrate our analysis on trade flows from Argentina to Brazil.

Trade in fruit and vegetables from Argentina to Brazil has increased 90 per cent in the last 5 years and includes a wide variety of products (see Annex D), but is concentrated over five products: garlic, pears, beans, apples and onions. Various reasons can be adduced for the growth of exports from Argentina to Brazil. First, the Brazilian domestic market has expanded considerably since 2003, particularly with the inclusion of some 20 million people into the broad category of the middle class (A+B+C)[79] which now represents more than 60 per cent of the Brazilian population, i.e. some 120 million people integrated into modern consumer markets (figure 4.2).

The second reason may be related to differences in the product quality and safety standards required by Brazilian importers as compared to the European countries which have been the traditional destination for Argentine products. This study aims to provide information to better understand these differences. Apples and pears are used as a case study since they represent the complexity of non-tariff measures (NTMs) and private standards common to most fresh products, as well as representing a significant trade flow from Argentina to Brazil and to EU.

79 In Brazil social classes as measured in annual family income are divided into classes A to E, where A is upper class, B and C represent the middle classes and D and E are lower classes.

Apples and pears accounted for 32 per cent of the total value of fruit and vegetable exports from Argentina to Brazil in 2011. Not only has Brazil grown in importance as a market for these two products, but the opposite trend[80] is seen for exports to Europe (EU27). In 2007, 36 per cent of apple and pear exports from Argentina went to Europe and 25 per cent to Brazil. By 2011, however, Argentina exported 28 per cent of its apples and pears to Europe and 33 per cent to Brazil (figure 4.3). To get a clearer understanding of this shift we focus our analysis on these two fruits, which share similar characteristics when it comes to standards and non-tariff measures.

It is important to note that the FOB[81] prices for pears and apples are similar for products sent to Europe and to Brazil. In addition, transportation and logistics costs are similar with these products being sent by sea to Europe and by road to Brazil. These factors, therefore, should not be considered as major reasons for favoring one market over another.

Standards: Differences and similarities between Europe and Brazil

To understand how differences in standards affect apples and pears trade from Argentina to Brazil and Europe, various elements need to be analysed. These include market regulation (categories and defects), food safety (hygiene, contaminants and pesticides), labelling, and private standards (flavor, aspect, size and color). Each aspect may be influenced by law or private standards, or both.

Government standards

The comparison of Brazilian and European standards has to be placed in the context of the harmonization of Mercosur legislation that began in the early 2000s. Although the Mercosur treaty was initially signed in 1991, it was not until 2002 that member countries, including Brazil, agreed on specific procedures to harmonize their laws. The obligation to introduce Mercosur decisions into the legal systems of each member country only took effect from 2003. From that time, a whole range of regulations regarding matters such as labels, market standards, food safety, permitted fertilizers and pesticides were reviewed, revised and harmonized across Mercosur countries. For example, the market regulation regarding defects and categories for apples was reviewed in 2006 as a consequence of the harmonization process. Although very advanced, the harmonization process is not yet fully complete.

For both the EU and Brazil, international trade in food products has been heavily conditioned by a range of NTMs relating to compliance with general principles and requirements of food law (as expressed in the EU in the General Food Law, Regulation (EC) 178/2002), and also by specific provisions designed to prevent risks to public health and to protect consumer interests, which constitute the principal concerns when considering general food laws in each economic bloc.

To ensure food safety, all aspects of the food production chain must be treated as a continuum. Regarding contaminants and residues, both Brazil and the EU have regulations clearly stating products that are absolutely forbidden and those for which maximum acceptable levels are specified, even though the two regions may differ about the categorization of particular products. Good agricultural practices, food handling, processing and storing are also clearly addressed in both cases and on these issues, Brazilian regulations are accepted as providing a level of safety equivalent to EU law. Labelling rules follow the same principles: they are designed to ensure that consumers receive all the essential information necessary to make an informed choice while purchasing their foodstuffs. This includes the clear definition of food designation, matters concerning publicity, product origin, the identification of growers and manufacturers, and the provision of nutritional information.

Given the existence of concerns about risks to plant health, phytosanitary protection mechanisms are in place in both Brazil and the EU. In the case of fresh products, these concerns are even more in evidence, since one infected cargo can jeopardize the efforts to eradicate infestations and diseases that have taken years to eliminate at the cost of millions of dollars.

An import license is required to import apples and pears whether into the European Community or into Brazil. In the case of Europe, this NTM is used by the government to control trade through the adoption of political or economic measures when necessary to protect local producers. The European Community (EC) Directive EC 514/2008, for example, states clearly that "apple producers in the Community have recently found themselves in a difficult situation, due, among others, to a significant increase in imports of apples from certain third countries of the Southern hemisphere", justifying the adoption of the import license practice. On the other hand, Brazil uses the import license to retaliate against restrictive measures adopted by Argentina. A Brazilian importer interviewed for this case study said that "the government is taking up to 90 days to issue an import license in retaliation against Argentina".

In the case of market standards regulation, both the EU and Brazil have laws that classify and define the different types of fruit and requirements relating to them. The EC classification covers size, defects, color, form, tolerances for the different categories, and packaging. On this matter, however, Brazilian law goes further and details 14 different types of defects and their respective tolerances, and even defines minimum pulp resistance, which makes compliance even more complex than is the case in the European market.

80 The same tendency can be identified for other products such as onions. However, one should be cautious to consider this an overall tendency, even though the Brazilian market has grown in importance for Argentinean fruit and vegetable exports in the last five years, absorbing today about the same amount of imports as Europe. Further studies need to be conducted to confirm an overall tendency.
81 FOB refers to "Free on Board" international commercial terms.

Table 4.9. Characteristics of governmental standards

Characteristic	European Union	Brazil
Law regulating the register and use of pesticides and fertilizers	Yes	Yes
Requirements on maximum residue levels	Yes	Yes
Requirements on restrictions and maximum level of contaminants	Yes	Yes
Law on hygiene and sanitary requirements	Yes	Yes
Labelling requirements	Yes	Yes
Demand for phytosanitary certificates	Yes	Yes
Demand for import license	Yes	Yes
Market standards	Yes	Yes—more complex
Traceability	Based on food operator procedures	Based on governmental procedures

Source: Elaborated by authors.

One fundamental difference between legislation in Europe and Brazil concerns the mechanism of traceability. The European food law establishes the food business operator as the natural or legal person responsible for ensuring that the requirements of the food legislation are met within the food business under their control. Even though there is no explicit legal obligation to extend traceability back along the chain beyond the immediate supplier, the General Food Law (EC 178/2002) considers that "a food business operator is best placed to devise a safe system for supplying food and ensuring that the food it supplies is safe; thus, it should have primary legal responsibility for ensuring food safety" and further that "food and feed operators shall be able to identify any person from which they have been supplied with food". To this end, "such operators shall have in place systems and procedures which allow for this information to be made available to the competent authorities on demand" (Article 18), which also includes information on products added to the food and eventual contaminants. With regard to imported food, the EC legislation considers that "food imported into the Community for placing on the market within the Community shall comply with the relevant requirements of food law".

Food origin and food safety are also formally controlled in Brazil. As was mentioned above, legislation in Europe and Brazil has a very similar structure with the major difference relating to who is actually responsible for the compliance of food with the regulatory requirements and how this compliance is achieved and ensured. In Brazil, the responsibility of this control lies almost entirely in the hands of governmental institutions. Brazilian law does not require the use of a formal traceability system so that information about food origin and food safety is not integrated and available as it is in the EC. To be able to establish the food origin it is necessary to gather information from all sorts of documents such as invoices, certificates and labels. Since this work is to be done by control authorities sometimes from different agencies and since developing countries usually do not have the same amount of resources as developed countries, this situation creates opportunities for more flexible conduct when implementing quality systems. This difference has a fundamental impact on the food quality systems adopted by supermarkets and also influences private standards systems.

European private standards

Private food standards expressed in the form of schemes enforced by third-party certification are mostly concerned with food law compliance, labor and environmental issues. In addition to this, buyers specify requirements relating to product characteristics, packaging, etc. Market standards for most products (including for apples and pears) are defined by legislation that includes many criteria for ranking products into different classes. However, when it comes to aspects such as flavor, ripeness, color and defects there is room for some flexibility and individual company requirements vary considerably, with the result that all kinds of products can be found in retailers' warehouses. In some cases, for instance, the grape color required by Brazilian supermarkets is more demanding than for some Dutch importers. On the other hand, the British market is well known for its very stringent criteria for color, brix and acidity. European importers usually send lower quality food to street markets or small retailers, but it is the big retailers who establish the high marketing standards demanded from southern producers. Yet, southern producers frequently complain that what can be seen in warehouses and wholesale markets in Europe is often of lower quality than what they are demanded to supply.

Private standards also introduce traceability requirements considerably in excess of those required by EU legislation. In such cases traceability goes far beyond tracking the origin of the product and involves responsibility regarding matters such as handling, packing, labelling, contaminants, maximum residue levels and good agricultural practices in general. Certification to standards such as GlobalGAP (the most widely adopted private standard by producers in Mercosur for gaining access to the European market) or other local certifications that comply with European law (e.g. on Integrated Fruit Production) involves meeting specific requirements in these areas. Although EurepGAP (the predecessor of GlobalGAP) started back in 1997, it was not until 2004 that every European importer involved in supplying supermarkets required certification from Brazilian and Argentinean producers as a condition for maintaining access to the supermarket segment of the European market. It is no coincidence that even though the Food Law (EC 178)

Table 4.10. Main drivers for dominant supermarkets' private quality systems

Pão de Açúcar	Carrefour	Walmart
Suppliers audit	Flavor	Origin traceability
Fertilizers and pesticides analysis	Fair price	Environmental sustainability
Microbiological analysis	Authenticity	
Inspection on reception	Food safety	
Traceability	Sustainable development	

Source: Carrefour (2012), Walmart (2012) and Pão de Açúcar (2012)

entered into force on March 2002, rules regarding imported food into the European market were only applied from 1 January 2005. We can see, therefore, that the food law and private standards prevailing in Europe are very closely connected. On top of these compliance requirements driven by EU legislation, private standards impose additional requirements relating to recall procedures, workers welfare, environmental sustainability and energy efficiency. In order to meet these requirements producers must make investments in facilities, internal control procedures, worker's training and environmental management and reports.

Brazilian domestic market private standards

During the last decade the Brazilian domestic market has grown in size and complexity, a development which has been driven by the leading transnational supermarkets which have become dominant through mergers and acquisitions and store network expansion inside Brazil. The top 500 supermarkets in Brazil had a total income close to US$100 billion in 2011, of which 61 per cent was generated by the three leading transnationals: Pão de Açúcar (Casino), Carrefour and Walmart.

In the wake of market expansion, the three dominant supermarket chains have implemented new fresh food quality and safety standards for both domestic and imported foodstuffs, which have influenced local producer organizations and are currently raising overall food quality standards in Brazil. The quality standards of the three leaders each have their particularities. Their basic thrust, however, is very similar and increasingly close to international food quality standards such as GlobalGAP, including controls on issues such as traceability, food safety, good agricultural practices, workers´ rights and quality compliance.

None of the three leaders, however, uses a third-party certification system such as GlobalGAP. Pão de Açúcar hired a third-party company to run their fresh food quality programme, which takes responsibility for visiting producers, orienting their quality procedures and establishing whether they comply or not with the quality programme. When producers are in accordance with quality requirements they are considered suitable to be suppliers and, even though there are written rules about food safety, these are not expressed through a formal scheme based on certification. Carrefour has a team of agronomists, food engineers and technicians that is directly in touch with producers. Nevertheless, it has recently outsourced part of its fresh food supply to a traditional wholesaler who is now also responsible for quality and runs its own quality programme. Walmart implements its own quality programme focusing on traceability and environmental sustainability without explicit mentioning of issues such as food safety and good agricultural practices.

The Brazilian domestic market for fresh products is very large[82] and there are plenty of opportunities for the market positioning of food with all kinds of qualities. Medium-size or small supermarket chains do not necessarily share the same level of quality systems as the three leaders and a few quality-oriented retailers (e.g. Hortifruti). Smaller supermarkets approach wholesalers and farmers and demand products of similar quality as that supplied to the three leaders, but these arrangements do not involve formalization of these obligations in written contracts. Even though food safety standards are increasing in Brazil there is still a long way to go before European market quality and safety levels are reached.

Comparison and conclusions

On first examination, the products exported from Argentina to Brazil and to Europe seem to be subjected to the same level of government standards, with the exception that Brazilian market categories are subjected to a more detailed set of characteristics.

The biggest difference between the two legal systems is the mechanism to control and ensure food safety standards. In Europe this is primarily enforced by the food business operator and leads to the establishment of a very complex traceability system commonly achieved through certification systems, the most widespread of which is GlobalGAP. In Brazil, food safety is enforced mostly by government bodies which have structural failures regarding inspection. Customs control procedures on the road borders between Brazil and Argentina tend to be less effective than in the ports both in Brazil and Europe. In Brazil, food safety inspections are carried out by the leading retailers but they do not demand third-party certification. In addition, the existence of a different register of recognized fertilizers and pesticides can make compliance to EU regulation more complex for Mercosur producers.

Private marketing standards are generally more developed in Europe than in Brazil led by big European retailers that require third-party certification for imported food. High- and low-qual-

82 Wilkinson et al. (2012) estimated the value of fresh products produced in Brazil as US$ 17.3 billion in 2009, considering farm-gate prices for fruits, vegetables, plants and flowers.

ity products can be found in both markets. In Brazil, however, the existence of formal standards only among leading retailers and a few high-quality-oriented supermarkets opens up greater market opportunities, also for Argentinean growers, for the sale of lower quality products to small- and medium-sized supermarkets with no consolidated quality systems. Producers claim that in Europe the supermarket chains set a high-quality standard which establishes a baseline for the fruit characteristics which are demanded also elsewhere.

The more stringent quality demands of the European market combined with the increasing growth of the Brazilian domestic market provides an opportunity for Argentinean exports of lower quality products to Brazil, with agreements on prices and discounts compensating quality problems.

One Brazilian importer interviewed for this study stated that "it is common, for example, that products imported from Argentina classified as category 1 do not meet the minimum standards required for this category. In these cases, if the supermarkets complain, we compensate them with discounts on prices".

Another importer said that "Argentinean producers are establishing themselves in Brazil as wholesalers and are redirecting lower quality products to this market segment". This does not imply that high-quality products cannot be found in Brazil, but they usually come from a selected group of producers.

Our conclusion, therefore, is that despite their formal similarities, and occasionally even higher quality demands by the Brazilian regulatory system, European standards are more stringent than Brazilian regarding food safety, traceability and marketing standards when it comes to the realities of implementation.

Case Study 3: Standards practised in South–South Trade: Perspectives and examples from Asia[83]

South–South agrifood trade in Asia: Some supply and demand considerations

There is a limitation of attractive market options for Asian agrifood producers. The Northern markets (the EU, the US or Japan) are the most favored market destinations with high-price expectations. But these are competitive and mature markets that are very demanding when it comes to product quality and safety and compliance with related standards. The alternatives are the domestic market or otherwise Southern markets (such as in the Middle East, China and the more developed economies among ASEAN member states), but these markets have lower-price expectations. Given these circumstances, producers will typically attempt to comply with the required standards just to qualify for exporting to the high-priced Northern markets. However, in the Asian context, only the larger farms and more progressive farmers are likely to be capable of complying with these standards protocols. The bulk of the producers—the small and rural farms—have major challenges linking to supply chains for Northern markets, and without assistance from the government or international development agencies they are most unlikely to be able to comply with these trade standards.

For these producers, exporting to Southern markets, particularly in the region, is an option. Indeed, as Table 4.3 above shows, intra-regional food trade in developing Asia has almost quadrupled between 2000 and 2010, representing an increase of US$89.4 billion. At the same time, Asian agrifood exports to other developing regions have also grown significantly.

The Republic of Korea, Singapore, Taiwan Province of China, Malaysia and large cities in China (e.g. Guangzhou, Shanghai, Hong Kong) and the Middle East (e.g. Dubai) are commonly considered to be the best Southern markets for Asian agrifood producers. The Middle East and China markets can take larger volumes but prices are uncertain. Meanwhile, Taiwan Province of China, the Republic of Korea, Singapore and Malaysia may have better prices but trading volumes are small. Other ASEAN markets are restricted only to the major city centers and for a small selection of high-value fresh produce. The limited range of fresh produce cultivars and the short period of harvest leave very small trading windows for cross-border trade between neighboring Asian countries. Sub-tropical fruits (citrus and stone fruits) from Pakistan and India may find attractive destination in the ASEAN cities, but they face stiff competition because China, Viet Nam and the Republic of Korea are also in production at about the same time. From May to August, Asia is awash with mangoes from India, Thailand, the Philippines and Pakistan. In addition, as will be elaborated and illustrated below, both intra-regional and inter-regional South–South trade flows in agrifood products are affected and shaped by non-tariff measures as well as public and private quality and safety standards and requirements.

Non-tariff measures and standards in South–South trade agrifood in Asia

Agrifood trade between countries in Asia is actually governed by very strict SPS standards. Each country has valid scientific reasons to protect human, plant and animal health. While each country has the right to challenge the spread of quarantine pests and diseases at home, related regulations and standards are often implemented as forms of technical barriers to trade. Overland border post controls on SPS regulations in mainland Asia are loosely enforced, or when needed to showcase. Import documents, shipping documentations and bureaucratic controls are often more earnestly considered by the border customs officials. The undefined and unwritten enforcement rules can give the customs authorities an impromptu reason to bar shipments.

Playing a cat-and-mouse game with border post quarantine officers will only put exporters in an inferior negotiation position with the importer. Denial and refusal to recognize that SPS regulations and quality and safety standards do play a role in shaping South–South food trade flows will perpetuate the unfair border trade practices for the exporters. Exporters that do not have the capacity to comply with regulations but are not

83 This case study was contributed by Kit Chan, Managing Director of K-Farm Sdn. Bhd., Malaysia.

aware of this will continue to ship products to the border while traders and commission agents at the border will continue to take advantage of the exporters' ignorance of existing regulations. Examples are easily drawn from the Viet Nam–China and Myanmar–China border trades (see below), occurring in the mostly unorganized trading networks. Border rejection is a penalty for non-compliance. However, such border rejections do not have a preventive effect as long as exporters believe that controls are not frequent and enforcement weak so that they can continue to bear the risk of non-compliance. Sanctions are most effective in promoting compliance.

Generally speaking, trading partner must (1) recognize that SPS standards are mandatory standards, and (2) approach compliance with such trade standards constructively. Standards need to be transparent, harmonized (regionally or internationally) if possible, and, if negotiated between the trading partners in bilateral agreements, should benefit all parties. Governments must take an active role to initiate cross-border dialogues and cooperation and to develop the enabling infrastructure for effective compliance mechanisms. Malaysia has taken such an approach: Malaysian authorities have worked with their counterparts in China and Singapore on bilateral trade agreements for the exportation of fruits.

The case of Malaysia

Fruit exports from Malaysia to China

Malaysian authorities have collaborated with their counterparts in China to establish a bilateral trade agreement covering the exportation of fruit to China and stipulating and clarifying certain rules and procedures. For example, a Pest List for papaya has been drawn up by Chinese authorities. Post-harvest hot water treatment (core temperature of 46°C for 10 minutes) is performed in Malaysia prior to shipments to China. Packing and labelling specifications are determined. The farms and the processing and packing houses participating in the bilateral trade programme are identified. Chinese officials from AQSIQ (General Administration of Quality Supervision, Inspection and Quarantine) perform audits on the farms and packing houses based on the plant and pest protection criteria[84] of the identified Pest List. A Phytosanitary Certificate is issued by the Malaysian Department of Agriculture to accompany all shipments of papaya to China. Upon arrival, the consignment is again checked for the presence of live pests.

Meanwhile, for the exportation of Malaysian pineapples, fumigation with methyl bromide is performed in addition to other inspections and documentations, prior to shipment. All fruits arriving in China are inspected again to ensure no presence of live pests in the shipments.

For frozen durian exported from Malaysia to China, the requirements include provision of a Phytosanitary Certificate and a Health Certificate from the Ministry of Health, farm inspection with Good Agricultural Practices (GAP) certification and identified Integrated Pest Management (IPM) systems, packing house audits with Good Manufacturing Practices (GMP) certification, and freezing treatment specifications (loose pulp frozen at –30°C for 30 minutes and storage temperature of at least –18°C). No shipments are permitted without compliance to these requirements.

The Malaysian agricultural authorities' initiatives to promote more sustained trade with China have taken the approach of adopting voluntary standards to be achieved at the farm level while also assisting the farmers and exporters by providing the enabling infrastructure for product processing and trade logistics. Individual farmers and exporters in Malaysia could not have afforded the heavy costs of such investments in facilities, but by publicly establishing the facilities and serving them to the location clusters of producers, smaller and also rural displaced farms are now able to supply products to China.

The facilitation of agrifood trade between Malaysia and China based on agreements on SPS and standards issues was achieved in a remarkably short period of time. By contrast, the negotiations between Malaysia and the United States on SPS issues in bilateral trade have taken a very long time and are still unresolved. One reason facilitating the rapid agreement and trade development with China is that China is in urgent need of agrifood trade with neighboring countries as there are many mouths to feed. Meanwhile, the United States has always been an attractive market for agrifood producers from all over the world and is in no hurry to review SPS agreements.

Fruit and vegetable exports from Malaysia to Singapore

The Agri-Food and Veterinary Authority (AVA) of Singapore and Malaysia signed a bilateral agreement in April 2012 for the importation of fresh fruits and vegetables into Singapore. Singapore has little or no agrifood production of its own and SPS issues are of less prominence. More importance and urgency is attached to the importation of safe food from neighboring countries, including from Malaysia.

Malaysia has initiated its national Good Agriculture Practices (GAP) scheme in 2001 with the intention of raising the standards of Malaysian farm practices through farmer extension programmes conducted by qualified farm extension officers. A number of quality assurance programmes for primary producers were developed together with related voluntary farm certification schemes including the fresh fruit and vegetable sector certification (SALM[85]); livestock certification (SALT); fisheries and aquaculture certification (SPLAM) and organic sector certification (SOM). The introduction of SALM in 2002 by the Malaysian Department of Agriculture marked the starting point of the implementation of GAP standards in Malaysia. SALM is a programme designed to accredit farms that adopt good agricultural practices, are operated in a sustainable and environmentally friendly way, and yield quality products that are safe for consumption (FAO 2007).

Although benchmarking of the SALM scheme to GlobalGAP was initiated in 2007, this process has not yet been completed successfully so that SALM does not receive recognition of equivalence with other countries' or private standards. However, the

84 According to the Protocol for the Exportation to China, dated 23 November 2007

85 SALM stands for "Skim Akreditasi Ladang Malaysia" or Malaysian Farm Accreditation Scheme.

Singaporean Agrifood and Veterinary Authority (AVA) recognizes the SALM certification of Malaysia. The participating vegetable and fruit farms are identified and must be certified with SALM before importation permits are issued. Farm audits are carried out by both AVA and the Malaysian Department of Agriculture. At the border post, samples of vegetables are taken for pesticide residue tests by AVA officers on every shipment. The AVA maximum residue levels (MRLs) are enacted from the Singapore Food Acts, the Ministry of Health and Codex Alimentarius. Current negotiations are under way that Malaysia vegetable exporters that have a "clean record" on pesticide MRLs for two years running will be allowed to go on a "green lane" at the border, where only spot inspections and sampling will be undertaken. This is an example where the importing client rewards compliance and sanctions the non-compliant exporters. The farm certification and recognition of SALM reinforces the food safety assurance for Singapore consumers. Even smaller farms in Malaysia are able to participate in this bilateral trade arrangement so that cross-border trade has been promoted.

One step further: The MPCA scheme

Malaysia has taken a further step with regard to SPS requirements in bilateral trade agreements by developing the Malaysia Phytosanitary Certification Assurance (MPCA) scheme. The scheme is based on the International Standards for Phytosanitary Measures (ISPM) formulated by the International Plant Protection Convention (IPPC) and supported by the Food and Agriculture Organization (FAO) of the United Nations. The MPCA scheme is voluntary and open to Malaysian entities dealing with the exportation of plant products under plant quarantine regulations and SPS requirements imposed by importing countries. The MPCA scheme is not for the domestic market but aims at export markets, especially those where SPS issues are a major stumbling block for exports. Qualifying farms and packing houses are certified by the Malaysian Department of Agriculture. The audit criteria cover, among other things, pesticides applications, pest-free production sites or low pest prevalence, sampling based on quarantine inspection, keeping farm records, establishing pest population levels, periodic surveys to determine pest status and the use of planting systems that reduce pest risk and pest outbreaks. Farms are also jointly audited and monitored by local officers as well as officials from importing countries.

The MPCA certificate gives credence to Malaysian plant exporters in confronting SPS issues with their clients. It is also used and in some cases even required for Malaysian exports to other Southern markets. For example, China buys Malaysian products under this MPCA arrangement and certain other ASEAN countries also specifically request the MPCA certificate. At the same time, Malaysia buys Philippine pineapples from farms on Mindanao Island under similar arrangements.

Vietnamese exports of dragon fruit to Northern vs. Southern markets

Dragon fruit has played an important role in Viet Nam as a cash crop for domestic markets, particularly among small-horticultural farmers, for about 20 years. By the year 2000, some farmers had started to export dragon fruit, first to the ASEAN markets and then, from 2005 onwards, to Europe. The potential for Vietnamese dragon fruit exports is great, but limited technical capabilities among small farmers have prevented them from complying with international SPS requirements.

The development of VietGAP was one approach to support small farmers in gaining international market access. VietGAP is a public sustainable standard supported by the Vietnamese Ministry of Agriculture and Rural Development (MARD). Agrifood producers in Viet Nam are certified to VietGAP on a voluntary basis. In promoting the VietGAP programme, the Vietnamese government agreed to fully support applicants on technical compliance expenditure (topography, soil, water and plant analysis); to provide grants for training technical staff; and to provide technical support to guide farmers in applying VietGAP protocols in their production and processing. The government also agreed to partially finance investments in infrastructure (including private road access, irrigation systems and pumping stations).

However, VietGAP has not yet been benchmarked to GlobalGAP. Exporters of dragon fruit shipping to supermarkets in the EU have therefore resorted to certifying to GlobalGAP directly.

The exporters see the GlobalGAP certification as a visa to conduct business with European supermarkets. The suppliers and service providers in these certified value chains are keen to hold on to this approach to accessing the European market as it gives them a competitive advantage over their local competitors. The participants in these certified supply chains are generally compliant to the required standards because they understand that any non-compliance would result in sanctions, including rejection of their shipments, and thereby disconnect their businesses.

However, there is the constant discouragement for the "serious" GlobalGAP-certified Vietnamese exporters in that they see their non-certified GlobalGAP fellow exporters continuing to ship to the EU without the certification. The established supermarkets in the EU only talk to GlobalGAP-certified suppliers but in times of short supply of certain products these supermarkets sometimes also buy from the wholesale markets. The wholesale market traders do not always ask for GAP certifications from the exporters so there are certain loopholes. This creates frustrations which filter down to the farmers who have begun to question the authenticity and relevance of the GlobalGAP certification.

The Vietnamese Ministry of Agriculture and Rural Development (MARD) and local dragon fruit supply chain stakeholders have actually collaborated with international donor agencies in various programmes to improve access to the EU market also for small farmers through achieving GlobalGAP certification. Despite these efforts, the number of operations that are certified on GlobalGAP is only a fraction compared to the vast majority who are not certified to any standards.

At the same time, the increasingly strict technical regulations on pesticide MRLs in the EU have prevented many exporters from expanding their operations. The main cause of this inhibition is the exporters' lack of capacity in monitoring the large number of contracted supply farms, and the capacity of the growers to keep up with pesticides management in line with

the latest MRL restrictions. The majority of farms in Viet Nam are small and privately owned, and they have limited financial capacity. Farmers typically operate with low technology usage and low production volumes. The combination of these conditions puts the farmers and growers at the mercy of collectors and middlemen. Much of the supply chain continues to run on loose multi-tiered intermediaries. Collections of produce from farms are done by lone operators on motorbikes who bring the produce to local centers from where they are transported to larger warehouses in the city. At this point, further selections are made; products for exports to neighboring countries are repacked while lower-grade products are distributed to local retailers. More stringent selections based on visual qualities are made for the European markets. Without GlobalGAP certifications, these specially selected consignments are exported to the wholesale importers in the EU (but not supermarkets!), the Middle East, China and other ASEAN countries.

While importers in ASEAN and other Asian countries like China typically do not require GlobalGAP certification, they ask their Vietnamese suppliers of dragon fruit to provide the Phytosanitary Certificate from Viet Nam to accompany their shipments. For example, China and

Indonesia do not require GlobalGAP certification for the importation of dragon fruit from Viet Nam. Meanwhile, the Phytosanitary Certificate is required along with proof of compliance with an array of newly adopted regulations and standards for food safety. The Chinese importers are less interested in certifications but more concerned about the visual and physical quality aspects (fruit size, maturity, color, etc.) of the product. Competitive pricing is important for exporters as some clients use the standards to leverage on pricing and the terms of trade. Importers also reject shipments if they fail to comply with safety issues.

Besides the EU, there are other very high-grade markets such as Japan and the Republic of Korea which require Vapor Heat Treatment (VHT) prior to shipment on top of voluntary certification (e.g. to GlobalGAP) and in addition to compliance with other SPS regulations. However, VHT machines are very expensive and the technology to operate the machines is not available in Viet Nam. On their own, Vietnamese exporters will never be able to comply with the VHT requirements. Vietnamese authorities will have to intervene by establishing and improving strategic enabling infrastructure to assist them.

Myanmar's fruit and vegetable exports to China and Thailand

Myanmar has very active trading along its borders with China and Thailand as traditional trading neighbors. However, the rapid income growth and development of the Chinese and Thai border markets during the past 20 years have left Myanmar far behind the more equitable relationship they had in the past. Kunming, the capital city of Yunnan Province in southwest China, is more attractive as a market for tropical horticultural products from producers in northern Myanmar provinces than is Yangon, Myanmar's previous capital city located in the south and the country's largest city and most important commercial center. A similar situation exists along the lengthy southeastern border with Thailand; fruits and vegetables from the southern provinces of Myanmar find their way much easier across the Thai border into Bangkok. Myanmar has a poor logistics infrastructure and the lower purchasing power in the country has undoubtedly driven more export trade across its borders. But these trade experiences have not always been favorable for Myanmar exporters of horticultural products.

Mandalay is a rich horticulture production area in Myanmar about 700km north of Yangon. Melons, mangoes and pomelo grown there can reach the town of Muse (on the Chinese border) by road on Myanmar trucks in about 20 hours. At the border, the commission agents are contacted. The goods are inspected and prices determined. The goods are then unloaded from the Myanmar trucks on to tractor-drawn carriages to cross the border checkpoints. Across the border, the goods are unloaded again from the carriages on to larger trucks bound for the Chinese cities.

Official export documents do exist in these transactions, but the rules are interpreted differently in these border towns and practices are not consistent. The commission agents make the unilateral decision on quality and price. The exporter may sell his consignment at this point after the 20 hours drive or he may redirect the consignment to Yangon, which in practice is not really an option.

Right now, both mandatory Chinese import regulations and voluntary standards from buyers are loosely enforced. Many Myanmar exporters are not aware of these regulations and standards or are not able to comply and thus just push through the goods and hope to get a buyer for them. Still, exporters who do not comply with the regulations have to take the heavy risk of rejection by the border guards if they impound the shipments. In addition, the exporters are often forced to put up with compromising practices and unfair prices stipulated by the commission agents.

If standards are followed by producers and exporters in Myanmar (which is a big if) and if standards are benchmarked and if consignments are certified under the standards, Myanmar exporters may find themselves in a better bargaining position at the border post. There are, thus, certain advantages for Myanmar exporters to abide by the regulations, comply with the standards required by the Chinese buyers and the Chinese authorities. For example, if they ensure the quality and standards compliance of their products, Myanmar exporters can deal directly with Chinese buyers. In fact, Chinese buyers often agree to predetermined prices wherever quality and consignment standards are agreed on and complied with, and in these cases the shipment can cross the border without the aid of additional market intermediaries. That is, also Chinese buyers would benefit from better standardized and organized trade transactions with their suppliers in Myanmar as product quality could be better ensured and prices more attractive with fewer intermediaries. The more favorable trading terms for exporters and farmers in Myanmar possibly encourage them to work better toward building longer-term and more sustainable business relationships with their Chinese customers. The trickle-down benefits of standards compliance potentially also improve the productivity of Myanmar farmers.

ASEANGAP

The ASEAN Secretariat (with member country representatives) developed a regional standard for Good Agricultural Practices, ASEANGAP, which was launched in 2006. ASEANGAP is a voluntary standard comprising a collection of principles to be applied in on-farm production and post-production processes with the aim of providing an ASEAN-wide quality assurance system. Importantly, ASEANGAP focuses on fresh fruits and vegetables only but does not cover other agricultural products. Its scope encompasses the production, harvesting and post-harvest handling of fresh fruits and vegetables in the ASEAN region. ASEANGAP consists of four modules covering (1) food safety; (2) environmental management; (3) worker health, safety and welfare; and (4) produce quality. Each module can be used alone or in combination with other modules. This enables progressive implementation of the scheme, module by module based on individual country priorities.[86]

The ASEANGAP scheme was initiated to enhance the harmonization of national GAP programmes of ASEAN member countries, to improve fruit and vegetable safety for consumers in the ASEAN region, and to facilitate intra-regional trade between ASEAN countries as well as exports to global markets. ASEANGAP is an umbrella standard that individual member countries will benchmark their national programmes against to gain equivalence. However, progress in terms of implementation has been rather slow. One of the reasons is that the implementation of national GAP programmes within the region varies, with some countries already having government-certified systems while others are only beginning the journey with awareness raising programmes for farmers.

In 2009, a Strategic Plan of Action was adopted on cooperation among ASEAN nations to promote and carry out ASEANGAP during the 2013–2016 period. The plan identified activities to raise awareness of ASEANGAP, strengthen national GAP programmes, benchmark national GAP with ASEANGAP, and promote and enhance private sector engagement. Moreover, an Expert Working Group on ASEANGAP has been set up to accelerate progress, consisting of experts from ASEAN member countries who work on measures to speed up the implementation of good agricultural practices in the region. Four meetings of the Expert Working Group have been convened so far, with the latest meeting having taken place in Hanoi in May 2013.[87]The initial idea was that by June 2012 ASEAN members who have their national GAP schemes (ThaiGAP, VietGAP, IndoGAP, etc.) would benchmark with the ASEANGAP along the four modules of the standard. Meanwhile, members that do not have their national GAP standards would adopt ASEANGAP as their own. By 2015, intra-ASEAN trade is to be conducted with compliance to ASEANGAP. However, for now, there are just a number of ASEANGAP pilot projects that have been implemented in several farms in the region. These pioneers hope to receive ASEANGAP certificates by 2015.[88]

One of the benefits of this exercise is that countries outside ASEAN—China for example—could trade with any of the ASEAN members under one common standard. Individual ASEAN members, in turn, benefit by leveraging on a common standard when they trade bilaterally with their giant neighbors. The pressure to trade with China and India will probably force these two regional giants to adopt stringent rules with their ASEAN trading partners, and ASEANGAP could play a central role in this. Meanwhile, with the rapid growth of incomes in the emerging economies among ASEAN member states the farmers are likely to move up to higher levels of standards compliance capacity, especially if their governments continue to invest in relevant infrastructure to provide enabling environments for agrifood supply chains.

Looking ahead, with the ASEANGAP as a benchmark in the trade with other countries in the region, Asian countries could begin to see reciprocal standard requirements put in practice, and a progressive evolution in the development of quality, safety and sustainability standards in a South–South direction. While ASEANGAP is still in an early stage of development so that it is maybe too early to tell if it can eventually fulfill all its objectives, quite some progress has been achieved during the last year or so and confidence in the success of the scheme has considerably grown recently.

The relevance of private standards in South–South agrifood trade in Asia

In a number of international markets, particularly in Europe, private sector standards play an important role and often are binding requirements that can have fairly significant implications for agrifood trade flows. Private standards are a key mechanism for many lead firms in the governance of their supply chain. They can, moreover, serve to differentiate products but also as mechanisms for product safety and quality assurance, reflecting higher consumer awareness and demands. It is frequently assumed that rising incomes in the South will also make consumers there more demanding with regard to quality, safety and sustainability aspects of the products they buy, in turn making their consumer behavior increasingly similar to that of their counterparts in the North. However, the expectation that the Northern model of private and sustainability standards development could be duplicated on to a Southern situation is simplistic and shows a lack of understanding for local communities and their consumption traditions (see also Guarín and Knorringa 2011). Indeed, private standards currently appear to be of rather limited importance for regional agrifood trade in Asia. According to UNCTAD (2007), this has two major reasons: first, in the two main export markets in the region—China and Japan—supermarket concentration is very low, while it is often supermarkets that drive the use of private standards (as in Europe, for example); and second, small farmers and companies still play a major role in production, trade and retail. For now, in most regional markets (like China, Japan, the Republic of Korea and Taiwan Province of China) the primary challenge for regional agrifood exporters is to meet public-sector regulations and SPS requirements. These markets are primarily concerned with typical SPS issues such as plant diseases, insect problems and the level of pesticide residues in fruit and vegetables.

86 For an outline of the ASEAN GAP standard, see ASEAN Secretariat (2006).
87 See http://www.asean.org/images/archive/EWG-GAP.pd
88 See http://talkViet Nam.com/2013/05/asean-agricultural-standards-promoted/#.UoJtq39wYkg

Moreover, food security and the cost of food are still topics of high relevance in many countries in the region. In fact, food availability continues to be an issue for the most part of developing Asia. Rural farmers are struggling to earn enough to feed the family. Also, subsistence agriculture is widespread with rural farmers not only being producers but also the consumers of their own production.

Against this background, the demand for private and sustainability standards (covering aspects of environmental sustainability or social and labor rights), if at all, is more likely to emerge in urban areas where a growing middle class is more inclined to adopt Western attitudes and habits. However, although in absolute figures the urban population may be quite sizeable, in some Asian economies, notably in China, the rural population is still the norm in most countries. There is also the fact that the urban population grew only very recently, mostly out of migrant workers and families who moved out of the rural provinces out of desperation or in search of work and better livelihoods. It is unlikely that these urban populations will be asking for sustainability standards or for private standards on food quality and safety—or only so far that it is not contaminated. For most of the poor population in Asian cities having three full meals a day is a luxury.

Still, as mentioned above, the most attractive Southern markets for Asian agrifood producers include large cities such as Dubai, Guangzhou, Hong Kong (China), Kuala Lumpur, Shanghai and Singapore. The niche supermarkets operating in these metropolitan areas often have a fairly sophisticated supply chain system. These cities have no production resources (except for Shanghai) and are mostly net agrifood importers. The sophisticated supermarket supply chains are often managed by international buying agents who offer better prices to suppliers but demand that the produce meets the equivalence of European supermarkets' standards for quality, safety, labelling and packaging.

Supermarkets purchase on contracted volumes and fixed prices with their suppliers. However, these volumes are small compared with the transactions of the wholesale markets and the distribution centers around them. Prices of fresh produce in the wholesale and distribution centers are very sensitive to supply conditions. The consistency of supply to supermarkets is thus severely affected by what happens to the general production conditions in both the domestic and the export markets. Therefore, fluctuations of supply in producer countries will greatly affect the behavior of the supply chain of supermarkets. Security of supply is a priority for supermarkets, and safety standards are often the first casualty in the case of short supply.

This concern for security of supply is not without cause. In Southern economies, food insecurity and high food-price spikes are constant reminders of difficult times. While the growing middle-income population in Asia continues to create demand for higher quality produce and for more stringent food safety standards, there are doubts that these consumers will quickly shake off their traditional eating habits to place sufficient emphasis on sustainable food production and consumption. Higher income could just mean that they eat more meat, purchase more expensive food items (e.g. shark fins), but not necessarily products meeting higher sustainability standards. Concerns for food safety, for environmental and social impacts, and for the sustainability of food production are generally still at an early stage of awareness.

In Asia, sustainability standards are generally perceived to be the producers' responsibility. Consumers may make demands for such standards but they are not willing to pay for the value addition. Producers have to pay the higher cost of certification and proof of compliance. The authorities in Asian countries are typically concerned about food supply and the cost of food, and these national goals have priority over sustainability standards. Food safety standards are an exception. But standards on food safety are often overshadowed by consumer demands and short supply. Overall, the importance of private standards is likely to grow only slowly in Asia so that their impact on regional South–South trade will probably remain limited for some time to come.

5 Perspectives on Emerging Priorities and Compliance Issues: The Emerging Landscape of Private Standards and Related Certification in the Agrifood Sector

5.1. Introduction

One of the core functions of the Trade Standards Compliance Report (TSCR) series is also to map the changing landscape of trade-related standards and associated compliance issues for developing countries. The purpose of this chapter on "Emerging Issues", thus, is to provide key stakeholders in the field with a platform to outline their perspectives on emerging priorities in trade standards compliance issues. In the last edition of the TSCR (UNIDO 2011), the floor was given to a number of international organizations, including FAO, ILO, IPPC, ISO, UNEP and the WTO, to present their views on how they believe the landscape of standards compliance might change over time for areas relating to their specific mandates, and on how such changes will influence developing countries' ability to further integrate into the global trading system and to participate in higher-value global markets.

In line with this idea of providing different perspectives on one particular issue, the present chapter collects different thoughts and opinions on the topic of "the emerging landscape of private standards and related certification in the agrifood sector". In recent years, the use of private standards—that is, standards developed and applied by non-public entities (including private companies, company consortia and NGOs) which are sometimes also referred to as voluntary standards—has become more important and more widespread and they are covering a growing spectrum of issues, ranging from food safety and environmental sustainability to labor conditions and social sustainability (see also chapters 2, 3 and 4 in this report). The question of interest here is whether this trend will continue or even accelerate, what developments are to be expected, and how all this will impact upon producers in developing countries who want to sell their goods in international markets.

To capture a diversity of perspectives, UNIDO invited a variety of stakeholders in the field to lay out their views on how they think private standards and related certification will evolve in the future, while putting a certain focus on the impacts on (producers in) developing countries. The think pieces that follow below are forward-looking, thought-provoking and they present reflections on expected future developments. Moreover, they have a certain focus on the focal commodities of the present report, including fishery and aquaculture products, and fruit and vegetables.

The chapter gathers a number of short texts contributed by different stakeholders, including lead firms that buy and import agrifood products from different locations around the world (Aeon, Mondelēz International) as well as business-driven platforms (GFSI—the Global Food Safety Initiative), exporter and producer associations based in developing countries (HORTGRO—the industry cluster for horticultural growers in South Africa, WFF—the World Forum of Fish Harvesters and Fish Workers), certifying and labelling organizations that play a prominent role in the agrifood sector (Fairtrade, GAA—the Global Aquaculture Alliance, and MSC—the Marine Stewardship Council), as well as non-profit and non-governmental organizations (IDH—the Dutch Sustainable Trade Initiative, Oxfam, and WWF—the World Wide Fund for Nature).

All contributors were asked to present reflections on the future relevance of private standards and their impact on both lead firms and developing country producers/exporters, and the role that technical assistance (agencies) can play. They were also asked to address questions such as the following:

How will the importance and use of private standards and related certification develop and change over the next 10 years or so? And why? What (or who) will be driving forces behind the developments that you expect? In which area(s) of certification do you particularly expect sweeping changes: food safety, social sustainability, environmental sustainability, water, energy, others?

What opportunities and challenges will changes in the private standards landscape bring to producers in developing countries? How can they benefit, and what will be their main compliance challenges?

What will be the main challenges that lead firms will face when trying to make their sourcing be more sustainability-driven? What are the benefits they can expect from applying private standards?

What is the role that certifying and labelling organizations as well as non-governmental organizations and non-profit organizations (NGOs and NPOs) will be playing in these developments? Will they gain in importance? Why (not)?

Finally, what role can development assistance play? How can technical assistance to developing countries through agencies like UNIDO contribute to strengthening their capacity to comply with private standards? What should be the key areas of intervention, i.e. the key areas of support to local producers in developing countries?

The following text contributions present a discussion of these questions by a variety of stakeholders who approached them from different angles. They capture different facets and views and, hence, provide a comprehensive outlook on the emerging landscape and future importance of private standards and related certification in the agrifood sector.

5.2. Aeon[89]

Becoming the sustainable leader: Sourcing responsibly, preserving the environment, and contributing to add value

The importance of sustainability and private standards for Aeon's sourcing policy

The Aeon Group—a group that aims to be a sustainable business leader in the high growth Asian business area—through its sourcing policy is seeking to make a significant contribution to the preservation of the environment and to Asian people and society.

With this goal in mind, we formulated the Aeon Sustainability Principle in March 2011 that defines Corporate Social Responsibility (CSR) activities for the entire Group. In this, we have laid out four key issues for achieving sustainable management that balances Group growth with the development of society. These are: (1) realization of a low-carbon society; (2) conservation of biodiversity; (3) better use of resources; and (4) dealing with social matters.

In fact, Aeon started selling Alaskan red salmon, salmon roe and other Marine Stewardship Council (MSC)-certified seafood in 2006, a first for the Japanese retail industry, and recently added salted mackerel and seasoned cod roe to the list of certified products available. In total, by the end of February 2012, we offered customers 12 MSC-certified products across 26 species—more than other retailers in Japan.

Aeon has also been selling notebooks and other Forest Stewardship Council (FSC)-certified paper products since 2008. From fiscal year 2011 onwards, we have been using FSC-certified materials for frequently used price tags and care labels.

Moreover, responding to customers' desire to do something through their purchases for the world's underprivileged, Aeon began developing and marketing Fairtrade coffee, chocolate and other products in 2004.

Many of the consumer products that the Aeon group markets and sells are derived from living sources such as food items, wood paper, or fibers, among others. The process of producing the ingredients for these products imparts a substantial burden on biodiversity and ecosystems. For Aeon, reducing this burden is not a matter of mere environmental consciousness. Rather, supplying products developed to this degree (i.e. so that they conform to the requirements of private standards and sustainability certification schemes) is a precondition for realizing true sustainability and for making it possible to continuously provide quality products to consumers.

Use of private standards: What benefits and compliance challenges for developing countries?

The world's natural capital is in an alarming state, characterized by lean harvests of agricultural produce due to abnormal weather, which has been caused by the destruction of ecosystems through overexploitation and by global warming. In many cases, communities and producers in developing countries are among the most affected by these developments, so promoting and enhancing sustainability in production potentially benefits them most. Also, as Aeon's supply chain expands globally, we need to step up the prevention of corruption such as bribery and coercion, and to consider the human rights of suppliers and the labor environment.

Producers in developing countries often face difficulties to respond to the demand of the markets in terms of quality and sustainability, leading to an inability to take the opportunity of trading with major global retailers. Developing the supply side by upgrading these countries' suppliers would entail networking and collective and individual actions to improve management, quality and sustainability practices with an impact on their entire business and social performance and reliability. Such upgrading should be guided by an inclusiveness principle to integrate less developed producers into formal trade, which in turn should positively impact the livelihood of producers, workers and their families and create new job opportunities.

In fact, many small/medium suppliers of developing countries, in particular, face a number of challenges, as follows:

- Knowledge and ability to meet customer requirements regarding reliability, consistency of supply, logistical and competitive pricing. Also there is no neutral organization to upgrade such small/medium suppliers' abilities in developing countries.
- Access to finance and new technology to meet market demands.

In this context, development assistance to poor countries delivered by agencies like UNIDO can be most catalytic in the scope of non-competitive matters. That is, any initiative or collaboration such as public-private partnerships for upgrading suppliers, shared knowledge and standardization practice would have a particularly strong impact in developing countries.

89 This contribution was prepared by Cenk Gurol, President Aeon Global SCM.

5.3. Dutch Sustainable Trade Initiative[90]

Sustainability: From philanthropy to core business

Sustainability as core business for front runners

Sustainability has become core business for front running companies. Due to the growing world population, economic growth, changing diets and emerging economies competing for raw materials, the global demand for food, feeds and energy will sharply increase in the coming decades. It is estimated that the demand for food in the next 50 years will equal the total quantity of food that has been produced by mankind so far. This growth will change international commodity markets from buyer markets into seller markets, presenting unprecedented challenges and opportunities for businesses, governments and civil society alike.

To safeguard the future supply, large global players in trade and industry are increasingly investing in their supply chains, as part of their core business strategy. Companies like Cargill, ECOM, IKEA, Kraft, Mars, Nestlé, Tata, Tesco, Unilever, Walmart and many, many others are allocating large budgets and deploying their expertise to strengthen their supply base in key strategic commodities. These investments are geared toward strengthening entrepreneurship and innovation in the first links of the chain, for example, through training and organization of farmer suppliers, introduction of new technologies, safeguarding crop integrity, improved varieties, rolling out smart land use practices, efficient use of fertilizers and other inputs and introducing new financial services. On the other hand, the investments also result in reorganization of the supply chain, for example local processing and value-adding and more direct chain relations, making supply chains not only more sustainable but also more rational, transparent and therefore often more effective, cutting costs. This sustainable supply chain transformation will help companies to secure future supply of raw materials and offer them a license to operate in the public domain.

The supply chain transformation policies of large global companies represent a great opportunity to boost local private sector development. The private investments can trigger the upgrading and up-scaling of millions of micro, small and medium enterprises in developing regions and emerging markets that for the greater part produce the raw materials. This is well illustrated by the 2005 study from Oxfam on the economic footprint and poverty reduction impacts of Unilever-Indonesia.[91] The study revealed that while Unilever's direct employment in Indonesia amounts to 3,000 full-time equivalents (fte), its supply and distribution chains generate jobs equivalent to 300,000 fte. So, supply chain transformation is not only essential to satisfy our future needs, it is also vital for international development, enabling producing countries to develop into valuable, long-term trading partners. Developing nations in particular are producing commodities that will be scarce in the future. Creating sustainable production in those countries, as well as sustainable consumption here, will provide a win-win situation for industry and trade as well as for the Millennium Development Goals.

Mainstreaming sustainability means creating scale

The business case for delivering development through market forces is clear, but the desired results are not easily achieved. Individual company investments, however large and long lasting they may be—Mars for example throws in about 10 million US$ per year to transform the cocoa sector—do not suffice to make commodity markets a source of global welfare and sustainable economic growth. The challenge of supply chain transformation and ultimately full market transformation is to create scale, since the problems to solve are too big to be answered by one company alone. Even the fiercest competitors in the market will have to work together in a precompetitive way to face the huge challenges that sectors are up to. This calls for open "behind the scene" cooperation and formulating joint action plans by companies that are competitors on the consumer market. In IDH's cotton programme, for example, competitors such as Adidas, H&M, M&S and Nike, work jointly to make the Better Cotton Initiative the global standard in the sector by supporting the production of one million tons of "better cotton" in 2015.

But even that is not enough. The basis for global market transformation is the bundling of forces of the private sector, civil society and government. While companies are primarily responsible for maintaining a healthy supply base, civil society organizations, labor unions, standard-setting bodies and verification agencies are engaged for ensuring impact, safeguarding the public interest, involving southern stakeholders, and co-implementing the programmes. The government is key in enabling and facilitating the market and civil society players through coordinated public policy support, as well as in upscaling and institutionalizing results. Only when public and private partners work together, large-scale market transformation can be accomplished.

Certification standards and beyond

In recent years innovative instruments and vehicles have emerged for an effective interplay of private sector, civil society and government. Experiences in sectors such as cocoa, coffee, palm oil, tea and timber indicate that sustainability standards and multi-stakeholder initiatives can be powerful mechanisms for change. At the same time we need to realize that the effects of those standards are temporary. Standards are instrumental for getting trade and industry involved, and creating market dynamics. But there is only so much that market pull can create. Market-based solutions are not a structural alternative for good governance, well-functioning legal systems, effective extension service systems and other public services. In our new coffee programme, IDH therefore has formulated per country national strategies to enhance the integration of the programme in local structures, so that public institutions and

90 This contribution was prepared by Ted van der Put, Programme Director of the Dutch Sustainable Trade Initiative (IDH).
91 See http://www.unilever.com/images/sd_Exploring_the_Links_Executive_Summary_tcm13–212718.pdf or http://policy-practice.oxfam.org.uk/publications/exploring-the-links-between-international-business-and-poverty-reduction-a-case-112492

regulations can provide the proper checks and balances, and embed new rules and incentives for sustainable coffee production and trading. Another great example of local embedding is our cocoa flagship programme in which the governments of Côte d'Ivoire, Ghana and Indonesia are actively involved in designing the programme. The launch of our latest cocoa programme in Abidjan was organized with the active support of the Ivorian government. Our brand-new pangasius programme in Viet Nam was set up with the active support of the Vietnamese government, Vietnamese fish farming and fish exporters' associations.

Trainings and compliance to national standards

Being a temporary solution, certification proves not to be very cost efficient, since the system costs for annual auditing are relatively high. Recent studies show that certification (and the premium involved in the system) does not account for the improvement of livelihoods of farmers. What does contribute to the improvement of livelihoods are better agricultural practices that lead to better yields (both in quantity and quality) and help safeguard the environment, since more efficient land use will help reduce the expansion into high conservation value areas. Also important for creating better livelihoods is that compliance with standards will help farmers to comply with national law, as in the case of soy farmers in Brazil where compliance to the national forest law offers soy producers access to all kind of preferential financial services that will help them to, for example, pre-finance inputs such as fertilizer. So, rather than focusing on the market pull of certification standards, we should emphasize the role of trainings and compliance with national laws and national standards, such as the national "Lestari standard" for sustainable tea in Indonesia. In the light of these lessons, IDH's tea programme for the domestic Indian tea market (largest global producer and largest consumer of tea) focuses on producing an Indian tea standard that involves Indian governments, Indian tea auctions and Indian tea companies.

Domestic markets

There is another reason why involving governments and companies in countries of origin is of growing importance to our work. The European and North American consumer markets are no longer the only dominant players on the world market of commodities. The domestic markets for tea in India and China, the domestic markets for timber and coffee in Brazil, the domestic palm oil market in Indonesia are of growing importance in world trade. To transform the global tea market, for example, the domestic markets of India and China are vital as they are the largest producers and consumers of tea worldwide. This calls for a different approach to market transformation in which certification does not play such a significant role while involvement of local governments, local NGOs and companies is essential.

What got us here won't get us there

As standards are a temporary solution, so are all current instruments for market transformation. The world is changing fast. Techniques, insights, circumstances, tools, partners and the global economic setting are constantly changing. The more we realize how compelling the scale of market transformation is, the more we will realize that what got us here will not get us to the next level of sustainability. Up until very recently, banks and other financial institutions were not included in most of our sustainability programmes. Now we clearly see that there is a need for including the financial world in our sustainable business case. This calls for an innovative approach in which we must answer questions such as: How can we make poor smallholder farmers bankable? How can we finance upstream value chains? What roles do other stakeholders in the value chain need to play? How can we move from donor money via soft loans to hard loans?

Prototyping new mechanisms and learning from our experiences is key. In our cocoa programme we are currently experimenting with a financial mechanism that includes international traders to finance fertilizer input for cocoa smallholder farmers in West Africa, one of the regions in the world where a well-functioning banking system does not exist. It is calculated that sustainable agricultural practices and fertilizer input can help triple (!) the current yields of cocoa farmers in West Africa, from an estimated 500kg/ha to 1,500kg/ha, which can make investments into this sector very profitable. So, when we manage to include banks and other financial institutions, we may be able to make the transformation toward sustainable production a self-propelling mechanism that can do without international donor money. The revitalization of the cocoa industry in West Africa can be completed within existing economic structures, and IDH and other donors can phase out their support.

In soy a similar process is under way. The EU soy sector is transforming toward responsible soy production and has committed to 100 per cent sustainable sourcing in 2015 and will co-finance the transitional costs for farmers in Brazil and Argentina. When the EU sources 100 per cent responsible soy, almost half of the world export of soy and thus production of soy will be responsible, after which IDH will be able to phase out its programme.

High ambitions

IDH is not created to produce islands of paradise in a sea of misery. We are here to transform sector markets and that is why we set high goals. Our theory of change involves a market transformation that unfolds in four stages: from the initiation phase in which market players are becoming aware of sustainability issues without a common vision with fragmented initiatives only; to the first movers phase in which compelling success stories of first movers attract other businesses, create movement in the sector; to the critical mass phase when several sustainability standards emerge and there is significant supply of certified sustainable products; and to the final phase in which sustainability has become a license to operate. We think this tipping point is reached when around 20 per cent of production and trade have become sustainable.

We at IDH aim to transform commodity markets into fundamental engines of economic growth in developing countries and emerging markets, where 70 per cent of the world's poor live. With a few notable exceptions, most economies in emerging and developing regions are based primarily on the production and export of commodities. In these countries, commod-

ity supply chains involve literally millions of livelihoods, both producers and workers, millions of enterprises and millions of hectares of land use.

As sustainability has become the core business for front running multinationals because of reasons related to supply security and license to operate, the agenda of governments, companies and NGOs merge for the first time in history. This gives us a unique opportunity and responsibility to change the way raw materials and commodities are produced in the world. As Programme Director of IDH, I feel privileged to be in the core of this change and, by convening public and private interest, efforts and resources, I am able to help create an unprecedented change toward a more sustainable economy that will create value for us and for our children.

5.4. Fairtrade International[92]

Fairtrade: Bending the norms of international trade

Fairtrade is a standard and certification system with a "people-first approach" to trade. Fairtrade offers farmers and workers in developing countries a fairer deal, and offers consumers a powerful way to reduce poverty and to instigate change through their everyday shopping. Fairtrade is a global movement: there are 1.2 million farmers and workers in more than 60 countries that benefit from Fairtrade. In 2011, sales of Fairtrade products rose by 12 per cent, reaching €4.9 billion—the top four products by sales are coffee, bananas, cocoa and flowers. As significantly, the Fairtrade label is globally the most widely recognized ethical label, according to a recent survey.

Beyond Fairtrade as a standard and certification system and as a movement that advocates for changes to the conventional international trading system, Fairtrade is, above all, a powerful market-led tool for development. When producers in democratically structured and well-governed organizations—such as cooperatives—are guaranteed a fairer deal when selling their products, trade becomes a formidable driver of poverty reduction. Fairtrade, therefore, puts producers and workers at the core of everything that it does, by trying to bring benefits that would otherwise not be realized through conventional trade.

Fairtrade standards lie at the heart of the system. They are developed through a multi-stakeholder participatory process and are designed according to the following principles: that producers receive at least prices that cover their average costs of sustainable production; that producers receive additional funds that can be invested in projects, such as improving the quality of products, their productivity, or providing services for the community; and that clear criteria exist to ensure that the conditions of production and trade of all Fairtrade-certified products are socially, economically and environmentally sustainable.

92 This contribution was prepared by Aaron Tepperman, project manager in the Standards Unit of Fairtrade International, and Ruth Fernández Audera, Senior Consultant on Standards for Fairtrade International (FLO).

Multi-stakeholder voluntary standards have proven to work and will continue shaping the sustainability agenda and discourse, while remaining a major driver of change. The presence of such initiatives will continue to grow in the coming years for the following reasons:

- Armed with the power of choice, consumers will increasingly not only be trying to "do no harm" but will actually use their purchasing power to "do some good".
- Consumers are increasingly demanding more from the companies that supply their products, whether that relates to efforts to improve corporate social responsibility, or to bring greater transparency and information to the market.
- Consumers now consider many facets of a product beyond price; leading companies recognize this shift and understand that consumers want to be able to identify with the values of the brands from which they purchase.
- There is no greater asset that a company can earn than consumer trust; knowing that an investment in the company yields an expected positive rate of social and environmental return will help to ensure customer loyalty.
- Mission-driven commercial supply chain operators, such as alternative trading organizations, are driving changes in product specific industries by being first movers toward more committed supply chain relationships that are built on mutual trust and respect; this is causing larger brands and multinational companies to move ever more quickly in this direction.
- Governments in emerging economies are acting on sustainability challenges with vigor and through well thought out policies and programmes.

Together, these factors lead brands and retailers on a sustainability "race to the top" where transparency and the number of informed consumers seem to be ever increasing.

Challenges, opportunities and key support

This outlook certainly poses challenges but also presents important opportunities for developing countries.

In terms of challenges, Fairtrade has already seen that rolling out standards for a wide variety of different producer set-ups is not always a straightforward task. Insufficient capacity, lack of access to finance and limited expert knowledge are but some of the key barriers that often make compliance for farmers and producers in developing countries difficult to achieve.

Another major challenge is being able to implement standards and prove compliance without excessive costs; in this case, unfortunately, the multiplication of similar but non-equivalent schemes has proven to be sometimes burdensome for producers that need to prepare for several audits, each often entailing different reporting requirements. Fairtrade and many other voluntary schemes are working on finding ways to reduce duplication and to be more effective; results related to these efforts should be expected in the coming years.

The most important challenge, however, is the limited bargaining power that producers possess in terms of how they

can cover the associated costs of implementing sustainability standards. This issue lies at the heart of the leverage that traders often have over producers. Even though producer investments on robust and democratic organizations, decent and safe working conditions and environmentally sound farming practices are no doubt a smart long-term bet, the producer almost always lacks the bargaining power to be able to share the investment cost with their buyers, and ultimately with consumers. Only when the prices of products cover their true costs can producers really transform their operations to ones that are sustainable. For this to occur, all operators in a supply chain, including consumers, need to be aware of the real costs of production and trade. By internalizing these costs and by strengthening the bargaining position of producers, Fairtrade is moving one step closer to achieving this goal.

On the other hand, the opportunities for producers offered through private and voluntary standards are plentiful: producers will receive higher and more stable prices, long-term trading relationships can be developed, and as previously mentioned, an overall more equal distribution of bargaining power can be realized across the whole supply chain. Focusing on sustainability can also provide more market opportunities and this will likely only increase as voluntary sustainability standards broaden their focus beyond traditional export markets and by expanding into new markets in the global South. Demand from consumers in the South for fair and sustainable products, even more so to promote their local economies, is growing rapidly. Fairtrade is already witnessing and supporting this move with the inclusion of a national member in South Africa, with expected members soon to come in Brazil, India and Kenya.

But the story does not end with the producer, the worker and their families. A recent impact study commissioned by two Fairtrade members brings evidence that Fairtrade also creates the preconditions for rural development by expanding the planning horizon of rural populations, which becomes increasingly longer term. For some Fairtrade products, the impact of Fairtrade's presence in the area was felt not only by the Fairtrade-certified producer organizations, but in the local community as a whole.

The challenges and benefits are unique for each market actor. As such, companies—including retailers that lead on the sustainability agenda—can sometimes struggle to involve their supply chains without imposing an excessive burden on producers. Companies run the risk of their key suppliers moving to less demanding buyers if compliance demands are not met with each operator's genuine support and a commitment to a process of cooperation. Leading companies can also be faced with the challenge of finding enough supply of a sustainable product of a given quality within a short time. The timelines of multi-stakeholder processes and the ones of the market are not always the same, and certainly there is a need for greater convergence in this area. Turning to the benefits for companies that adopt voluntary sustainability standards, being a first mover can lead to consumer loyalty and trust, which, despite the possibility that all traders and companies move in this sustainability direction in 10 years, will still offer them a significant advantage.

To make the most of voluntary sustainability standards, development organizations like the UN agencies can also play a fundamental role. Development assistance can support producers by voicing their concerns on the international stage through advocacy campaigns, and by delivering direct or indirect capacity-building services. A key action can be funding and supporting greater producer participation, voice and ownership in voluntary schemes. Along these lines one significant recent change at Fairtrade is that producers are now 50 per cent owners of the system, which guarantees that the system is steered by, and responds to, producer needs. Development assistance can also take an active role in supporting the development of local voluntary standards and local certification schemes in emerging economies. Lastly, a significant contribution could be assisting producers that are already compliant with sustainability standards but that lack the ability to show it. As such, gathering and sharing information requires certain skills and is time consuming; support in the area of information management, including the use of IT tools would be a key contribution of development assistance.

Looking ahead

In this scenario of increased interest and involvement in sustainability Fairtrade is also witnessing brands developing their own private sustainability codes, which could lead to mission-driven voluntary standard-setting organizations becoming unnecessary or irrelevant. However, Fairtrade and other similar organizations are key in setting the gold standard and in ensuring that fairness and sustainability concepts, as well as the process to arrive there and achieve them, are well defined and not diluted. Private codes can therefore have standards of best practice to look upon and work toward. By guaranteeing credibility, multi-stakeholder sustainability standards create a feeling of consumer trust and the feeling of influence, that their buying choices can make change happen.

Sustainability standards have been growing and evolving and will continue to do so. We can expect that standards will go beyond a product-only approach toward efforts to support brand-led changes that have actual and increasingly larger positive impacts on their supply chains. Subsequently, responsible companies will need to start looking at, and measuring, the positive impacts they are creating, while communicating this information in a clear and transparent way to the public. In this area, voluntary standards will play an integral role by ensuring that claims are credible. In this regard, Fairtrade is, for example, raising consumer awareness about the long and complex journey that producers embark on every day toward solving their myriad challenges. Working with companies and bringing consumers along for the journey is one powerful way for Fairtrade to keep these challenges at the front and center of everything that is done in the sustainability scheme arena.

5.5. Global Aquaculture Alliance[93]

Trust but verify. The value of certification on the aquaculture supply chain

The imperative of benchmarking or even streamlining

Currently there are a variety of different certification standards in place for both wild caught and farm-raised seafood. Such certification has been sought after by retailers to ensure the sustainability of their supply chain (among other reasons). Farm-raised seafood—aquaculture—now represents over 50 per cent of all seafood consumed and as such it is critical that this sector is farmed in a responsible fashion. Given the number of differing third-party certification schemes, it is the belief and hope of the Global Aquaculture Alliance (GAA) that there is a streamlining, or at the very least a benchmarking process developed for all certification standards within seafood, be that wild caught or aquaculture. There is a certain amount of confusion in retail over what each certification standard stands for and how effective (robust) they are, and indeed what parts of the supply chain they affect. We also believe that while there will be some rationalization of certification programmes (driven primarily by the choices made within the market place, i.e. retailers and food service companies), it is healthy to have several choices for the market place to choose from. Different retailers have different agendas, goals and priorities. It may not be possible for one certification programme to meet these needs and therefore having some competing options is a strong advantage.

In our opinion, the time has passed to have the discussion on how the importance of third-party standards will grow. We have seen over the last three years a tremendous push from the retailer and food service sectors requiring such programmes. In fact, we believe that in the coming years, it will grow increasingly difficult for producers to do business in many markets unless they achieve such certifications. The retail sector will continue to be the driver of these efforts, with the support of NGOs and scheme owners. The supply chain will look to the retail sector and act accordingly. Through environmental or corporate social responsibility (CSR) programmes, retailers will continue to protect and ensure that their customers are purchasing seafood products raised or caught in a sustainable and responsibly produced way.

We would look to an organization such as the UN Food and Agriculture Organization (FAO) to take a position on how wild caught or aquaculture certification schemes are benchmarked. Currently, just about all of the available schemes make the claim that they are fully "FAO compliant", that is, compliant with the FAO's *Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries* which were adopted in 2005 and revised in 2009. However, only a few are truly compliant to the letter of the guidelines. While there are FAO guidelines in place for both aquaculture and wild caught standards, there is no mechanism to suggest if existing standards are actually compliant so any scheme can make the claim that it is compliant without any oversight. We believe this is a gap that must be closed in the coming years.

Private standards offer opportunities to developing country producers

As many developed economies have adapted to a new norm where private standards and related certification are a basic requirement for aquatic products, there is a massive opportunity for developing countries, many of which have seafood as an emerging industry. Understanding what the export markets will require will enable developing countries to put steps in place early to meet these needs. We know that, to meet projected demand, aquaculture alone will need to double supply in the coming 10 years. A large piece of this will have to come from developing countries that have some excellent growing conditions for various aquaculture species. While a lot of this growth will come from Asia and South America, we believe that Africa has a key role to play in the future (especially with the development of infrastructure). We are beginning to see strong certification requests from such countries, which are positively impacting supply. It will, however, take some time to ensure that the standards implemented in developing countries meet the rigid requirements of the market place. Currently this is a mixed bag when it comes to results. However, it is clear that such areas will play a strong role in ensuring that there is long-term sustainable growth in aquaculture. Many retailers are calling for their suppliers to look for non-traditional sources and small-farm operations to increase diversification of supply. The GAA believes such developments will help bring developing countries into large volume production relatively fast.

Shortage of supply as challenge for lead firms

For lead firms and importing companies, the biggest struggle currently, and for the next several years, will be the availability of farmed certified product. While the demand has not surpassed supply, it is close. As a result, there is a large responsibility on certification scheme owners to play a very active role in in-country training to make sure farms are ready for certification in the longer term. Lead companies will be tasked not just with the availability of farmed products, but also with determining and tracing the origin of the fish meal being used at such farms. The NGO community will always look for the retail and food service community to drive change through the supply chain. Suppliers will have to be more actively engaged in the source fisheries that aquaculture farms need in the development of many species feeds. One example is the South American anchovy fisheries that are largely used in the production of fishmeal, which then goes on to feed mills, and ultimately into the aquaculture supply chain as feed. The scarcity or lack of certified fishery resources is a very real concern, and one that the market place is beginning to react to.

Finally, lead companies are struggling to sort out which schemes stand for what imperatives. A benchmarking process, organized and administered via an independent mechanism or broker (perhaps through the FAO), is very much needed in this area to ensure clear roadmaps for the market place and to ensure that duplication of effort is avoided.

93 This contribution was prepared by Peter Redmond, Vice President Market Development, Global Aquaculture Alliance.

The growing importance of standard-setting organizations

It is our belief that the role of standard-setting organizations such as the Marine Stewardship Council (MSC) and the GAA will continue to grow in the future. As the market place continues to adopt sustainability programmes globally, most countries with aquaculture production will continue to insist upon and adopt independent third-party certification, even if they do this in conjunction with their own policies. The importance of standards setters will grow as long as they can deliver against perceived benefits. The only threat in this area that we see is what lengths scheme owners are willing to go not just to pre-assess, but also provide expert advice and guidance for farms and fisheries that will enable them to reach certification. Many farms or fisheries avoid certification today, not because they do not want to do it, but they do not know or understand what is required to achieve certification. In conjunction with this, once a farm decides they do want to become certified, scheme owners must provide a means by which they can assist farms in reaching the requirements of certification. Within the GAA, for example, there is a mechanism for assisting and training farms to prepare for certification in conjunction with a small farm certification model that enables small groups of farms to coordinate their efforts together. Such tools prepare the farms for the actual process of certification, and put them in a much better position going into the process. To retain and grow this influence, all, not just some of the schemes need to be able to provide this "boots on the ground" type of training. This point is especially pertinent for the developing world.

In addition, GAA sees a massive role for development organizations such as UNIDO to get involved at the country or local level and help promote the growth of small-scale, responsibly grown aquaculture. Support to local producers, whether at farm or hatchery level, is urgently needed as they endeavor to compete in a market place with multinational companies that are already well aware of and familiar with the certification and sustainability landscape. The advantage of development agencies like UNIDO getting involved in this area would be manifold:

4 Recognition and acceptance of such bodies as independent authorities with global acceptance.

5 Provide funding and technical assistance and advice to help farms and hatcheries in the developing world improve their operations.

6 Organizations like UNIDO can provide exposure to developments and changes in the sustainability standards landscape on a wider stage at governmental level, an area that to date has been very minimally addressed. UNIDO has members and, thus, a stage that cuts across the globe.

7 Help to create open access to local markets and operations.

5.6. The Global Food Safety Initiative[94]

Sharing the responsibility: How multi-stakeholder collaboration is advancing food safety globally

The emergence and rising importance of private standards

Over the last two decades, heightened interest among consumers in global food production and food sourcing has inextricably linked food safety and food provenance. The new global supply chains cut across multiple regulatory jurisdictions and private standards have been able to facilitate the coordination of food chains across multiple locations, producers and companies and, in doing so, transmit and manage information on the nature of products and the conditions under which they are produced, processed and transported.

It was the lack of guidance in implementation and conformity assessment in global food systems exposed by the rapid stretching of global supply chains throughout the 1990s that drove the formation of the first proprietary schemes such as BRC (British Retail Consortium) and IFS (International Food Standard/International Featured Standard) among others. Private food safety management certification schemes, which are commercial food safety programmes that include an auditable and certifiable food safety standard and a governance and management system, have today become increasingly important in global food supply chains influencing both domestic and international trade.

Those schemes recognized by the Global Food Safety Initiative (GFSI) are all fundamentally based on the General Principles of Food Hygiene Code of Practice adopted by the Codex Alimentarius Commission. They draw on their hygiene codes and also seek to address issues that are currently faced by the food industry; good examples of this are incident management, food defense and allergen management. These supplementary requirements, by their very nature, add robustness and rigor to the base requirements of food safety principles and provide added confidence and further verification of processes. They are particularly useful in establishing traceability and increased visibility over the whole supply chain, often linking differing production sites through the traceability requirements.

The development of private standards has since been expanded to encompass other key elements such as social and environmental management of supply chains. They are regularly revised by industry-driven technical committees who seek to ensure that they are always relevant to the evolving needs of the food industry.

94 This contribution was prepared by Claudine Musitelli, Vice President, Ethical Sourcing and Food Safety Initiatives, The Consumer Goods Forum; the daily management of GFSI is facilitated by The Consumer Goods Forum.

The different functions of schemes are: standard-setting and adoption, implementation, conformity assessment and enforcement. These are carried out by a variety of public and private entities according to the scheme. Much of the work of private schemes is concerned with detailing rules concerning implementation and conformity assessment. Within the GFSI recognized schemes, it is the control of the application and conformity assessment applied by retailers and food service companies alike that has led to the wide adoption of private schemes in the last decade.

Which areas of certification will see particularly sweeping changes?

The release of the revised *GFSI Guidance Document Sixth Edition* in 2011 highlighted the increasing focus on scheme governance and the competency of the practitioners that operate the scheme and monitor the conformance. There are many private schemes emerging particularly in primary agriculture where good agricultural practice, sustainable production or care of the environment was the primary purpose rather than food safety. The clearly defined and internationally agreed food safety compliance criteria are often embedded within the wider purpose of these private standards. The ability to identify the key criteria and to ensure that they are applied with a suitable rigor required by food safety has been at the heart of the changes made to the GFSI requirements.

Public interest in sustainability continues to grow but the definition of what constitutes sustainability is still largely up to the individual to define. The proliferation of sustainability standards will continue until there is an industry consensus on what sustainability looks like and how it can be measured.

The Global Social Compliance Programme (GFSI's sister organization for the continuous improvement of working and environmental conditions in global supply chains) has been leading a unique effort over the past years to drive convergence by building comparability and transparency between existing social compliance and environmental compliance systems through the development of an equivalence process. The objective is to move away from the duplication of standards and audits and refocus efforts on collaboration on remediation and capacity building at suppliers' sites for the development of long-term solutions.

Also, food security and food fairness will become more important in global supply chains as we consider growing populations and the fair distribution of global resources. In this respect, water, land tenure and improving the local social capital through food production activities will come under a brighter consumer spotlight. It is expected that many of these abstract concepts will start to appear in sustainability criteria in the near future and will be the subject of much debate.

Future compliance challenges for producers/ exporters in developing countries

The extensive work that has been done by the GFSI Global Markets Technical Working Group has identified that one of the biggest challenges for developing countries is meeting the often stringent requirements of customers for local or export business opportunities. Market opportunities for companies often exist within formal supply chains where entry requirements may be high. These businesses do not necessarily have access to the expertise, technical and financial resources to meet all necessary food safety requirements.

The GFSI Global Markets Programme seeks to build food safety capacity for small and/or less developed businesses that encounter difficulty in implementing the Hazard Analysis and Critical Control Point (HACCP) system in their food safety management systems due to one or more of the following challenges: size, lack of technical expertise, economic resources or nature of the work. The comprehensive step-by-step programme guides small and/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 documents contained in the programme, such as the checklists and assessment summaries and assessor guidelines for both the basic and intermediate levels, and the protocol for implementation of the programme, form a comprehensive toolkit to support companies on their path to continuous improvement of their food safety management systems.

Initial pilot programmes, carried out by organizations such as UNIDO, COLEACP[95] and the International Finance Corporation of the World Bank in collaboration with key food industry companies such as Metro, Carrefour and Aeon, show a more than 60 per cent increase in embedded knowledge when these training plans are implemented. Feedback from these programmes has demonstrated a rapid improvement in the food safety knowledge and understanding of the systems needed to manage food safety, enabling businesses to qualify for local, and eventually even export, business by satisfying customer requirements for food safety.

Opportunities and challenges for lead firms

Global economic changes have created new regional producers of food and a growing population within those new economic giants. The growing population will become new consumers of both domestic and imported production. The ability of established companies to embrace the new markets will depend on the ability of those companies to work locally to produce safe and sustainable food products. Those companies that are unable to adapt controls and systems originally designed for developed country production systems may find themselves at a disadvantage through the costs of inefficiencies and incompatible systems implementation.

The role of development assistance

The implementation of effective food safety controls in food for both export and domestic production relies heavily on both public and private entities. Private companies have the required competencies and implement those within a relatively small closed production environment. The requirement to implement safe food practices in the public domain rests with

95 COLEACP—Comité de Liaison Europe-Afrique-Caraïbes-Pacifique, or French interprofessional network promoting sustainable horticultural trade

regulatory bodies that may find themselves lacking capacity and resources as markets develop.

In the last decade the roles of private and public actors in food safety have continued to be debated in many committees and conferences, but collaborative platforms such as that provided by the GFSI have been able to bring the standard setters and regulators into the same space, and in many cases closer to agreement through common understanding of positions.

Strengthening public capacity, designing and implementing effective regulatory frameworks and in-country competent authorities is an important role that the donor community and international development agencies can facilitate. A competent and efficient public food safety infrastructure is not only a business enabler but ensures that the benefits of safe food are provided to the local communities as well as to the export consumers.

Public-private partnerships are sometimes complex and difficult to initiate and a convening partner such as UNIDO could provide a platform for cooperation. Companies that are interested in supporting or cooperating in public-private projects could use a UNIDO management framework to provide inputs and expertise to strengthen the developing country infrastructure and capacity.

What role will forums such as GFSI play in these developments?

The GFSI is made up of diverse stakeholders but has a clearly defined mission to improve global food safety application. It is particularly evident in the activities of the technical working groups where stakeholders representing all aspects of the industry work alongside each other in a precompetitive activity designed to collaborate on key food safety issues, such as auditing competence and the implementation of best food safety practices from farm to fork.

GFSI's technical working groups, conferences and other activities provide an opportunity to all participating public and private stakeholders to share best practice and to facilitate knowledge sharing across a wide variety of food safety-related topics. Increasing the participation of public and regulatory authorities in GFSI technical working groups, as has been the case with their involvement in the GFSI Global Regulatory Affairs Working Group, continues to build bridges between the activities of regulatory bodies and private voluntary standards bodies. This collaboration will provide an important contribution to food safety in the next decade.

The benchmarking activities of GFSI provide the global food industry with an equivalent set of recognized food safety management schemes that have been benchmarked against a globally determined common set of criteria. All GFSI recognized schemes are science-based schemes grounded in the food safety principles laid down by the Codex Alimentarius Commission and based on relevant ISO standards. This allows manufacturers and producers to implement the scheme that best suits the nature of their business, and allows their buying companies to have confidence in sourcing from that supplier. The benchmarking activities of GFSI will help companies to differentiate food safety components within the growing number of multi-discipline private standards that are emerging, and to ensure that the correct choices are made by the providers of food when accepting private standards.

The growth of the annual Global Food Safety Conference and the regional GFSI Focus Days in recent years has continued and the interest of the participants to attend is clear evidence that there is willingness on behalf of the industry to collaborate in precompetitive activity.

5.7. HORTGRO[96]

Africa and private standards—not for cowards!

The challenges of horticulture smallholders

Smallholders in the horticulture sector face a number of challenges when it comes to exporting and participation in international trade. These include the capacity for continuous supply, compliance with a plethora of technical requirements, costs associated with certification, as well as administrative burdens. Moreover, the multiplicity of private standards and certification schemes and the costs related to obtaining such certification pose additional challenges to smallholders in horticulture.

The role of private standards

We from HORTGRO, an umbrella communication platform for a number of horticulture sectors in South Africa, accept that private standards are part of the commercial realities of the global environment within which we operate, be they social standards, quality/product or environmental. That does not mean that we like them or agree with them, but merely that we accept the right of the retailer to demand a set of specifications and requirements it wishes to set. The same goes for the suppliers—it is their right to accept this or seek other clients.

The requirements associated with private standards and labels have not been all bad—they highlighted gaps in production, packing and distribution which has led to "best practices". There will obviously always be room for improvement, but these practices are embedded in the way we produce and pack our fruit.

Our problem on the supply side is that private product (safety and quality) requirements are mostly unscientific and seem merely an effort to differentiate the product—always at the expense of the supplier and rarely with a commitment to a price that compensates the supplier for the extra expense. In fact, it seems as if the requirements are not that important the moment there is an undersupply and the retailer is running a risk of an empty shelf. This is neither fair nor ethical behavior.

It is our view that a product is either safe or not—and official standards and public regulations ensure this based on sci-

96 This contribution was prepared by Anton Rabe, CEO of HORTGRO South Africa.

ence. A product cannot be safER than another if scientifically proven facts state that a specific residue level is safe. If independent third-party certifications confirm that requirements and legislation have been complied with, another product cannot be regarded as being safer—or more ethical, for that matter, if certification is about social and environmental issues—than another.

Little in return for compliance with private standards

So the requirements associated with private standards and certification schemes are already mostly captured within labor, trade and related legislation—if you comply with these, you are there! Moreover, as mentioned, these requirements are standard practice among producers and will remain so—so why continue to demand differentiation? Meanwhile, in the overwhelming majority of cases, these private standards only add costs, jeopardizing profitability for producers—it's very seldom that adhering to these standards will ensure higher returns justifying the increased input costs. Isolated labels like Fairtrade do earn a slight premium, but that is not a premium in return to growers for the produce—it is returns to communities. Overall, therefore, the benefits from the use of private standards accruing to developing country producers and smallholders are rather limited.

Sometimes it feels as if retailers and traders require more from South African suppliers than from other sources. We "feel" that retailers perceive South Africa as a higher risk source than other countries but we fail to see why—given that South Africa is a country having very progressive labor legislation with third-party certifications, proving very high levels of compliance and confirming that many producers pay more than minimum wages and provide many social (housing, medical, retirement, recreation, education, etc.) services which are not really their responsibility.

So, although private standards might induce producers to improve the quality of their products or the consistency of their supply (e.g. through a particular focus on best practices), the requirement of compliance with private standards increases commercial pressure and impacts negatively on the producers' profitability, which has a knock-on effect on their ability to re-invest in new orchards and provide for the social aspects expected from agriculture and not from other sectors of the economy.

We do not believe that retailers realize the implications of their seemingly random decisions and requirements on the cost structure of producers and the resultant pressure on profitability and sustainability—and ultimately the ability to pay adequate wages at farm level, which in South Africa are already up to 40 per cent higher than the national minimum wage. It is particularly difficult for our emerging growers to comply with all the requirements thrown at them.

Future issues and the importance of harmonization

It is vital that some harmonization takes place, a process that has developed well with the Sustainability Initiative of South Africa (SIZA) which establishes a single ethical audit system and was initiated by Fruit South Africa, a body representing the four South African growers' associations in the fruit industry, including HORTGRO, and the Fresh Produce Exporters' Forum (FPEF).

As to the future—no doubt the pressure and demands from a highly concentrated retail sector on a highly fragmented production base will increase. Environmental and water issues are already on the cards and will gain importance as part of the "triple bottom line" related to the re-definition of "sustainability" to encompass human, environmental and economic issues. Moreover, I believe the focus will remain on social issues where South Africa does have a lot of challenges, but the agriculture sector cannot on its own address all problems.

We can only ask that retailers (and consumers as the ultimate "watch dog") to ensure that ethics and fair practices are practised throughout the value chain and under all conditions and not just when it suits them. Hence, in order to enhance the role of private standards and labels in contributing to improvements in the livelihoods of smallholders, it will be essential to make sure that they themselves operate ethically. The perception is out there that the rules are easily bent by the retailers to their advantage when supply is short. If growers are expected or demanded to ***always*** operate ethically, so should the retailers. Simplifying and making the accreditation process more cost effective would also be important to tap into the potential for a positive impact of private standards and certification schemes. Development agencies could also play a role by supporting smallholders with training material to address the gaps we identify from time to time, by supporting our Sustainability Initiative and by stopping to move the goal posts. The point where requirements become too strict and too costly to comply with is not that far in the future!

5.8. Mondelēz International[97]

Certification and beyond: Private sector engagement in partnership approaches

Mondelēz International and sustainability

As one of the world's largest snacks businesses, Mondelēz International is dependent on natural resources that are increasingly coming under pressure. So, it is critical that we run our business in ways that are environmentally, socially and economically sustainable over the longer term. Our efforts focus on what matters most to our business and where we can have greatest impact: agricultural commodities, packaging, energy, water, waste and transportation/distribution.

Agriculture is at the center of our strategy. We use raw materials every day for our branded products such as Cadbury, Côte d'Or, Milka and Toblerone chocolates, Jacobs and Kenco coffee, and Oreo and LU biscuits.

As one of the world's largest purchasers of cocoa, coffee and other commodities, it is not only our responsibility to think

97 This contribution was prepared by Jonathan Horrell, Director Sustainability, Mondelēz International.

about the future, it is essential for us to take action to ensure a sustainable supply of raw materials. We can influence the future of those crops by supporting the communities that grow them. We want to be the global leader in snacking and we believe there is more joy in consuming our products if there has been joy in growing and producing them.

Certification

Mondelēz International is today the largest buyer of Rainforest Alliance Certified™ coffee and Fairtrade-certified cocoa. In 2011, we purchased 50,000 tons of coffee from Rainforest Alliance Certified farms and more than 20,000 tons of Fairtrade cocoa for our key brands Cadbury Dairy Milk and Green & Black's.

Certification has contributed substantially to our brands' equity and in some instances generated considerable growth. In the UK, positioning our Kenco brand with the Rainforest Alliance Certified seal generated double-digit revenue growth and product innovation. We have also launched brands in France, Sweden, Italy, Germany and Spain using coffee from Rainforest Alliance Certified farms.

In chocolate, we carry the Fairtrade certification on Cadbury Hot Chocolate and Cadbury Dairy Milk as well as numerous varieties within the range. There is also Fairtrade Cadbury Dairy Milk in Canada, New Zealand, Australia and South Africa.

Certification has resulted in benefits flowing to farmers. We estimate that our partnership with the Rainforest Alliance has benefited more than 400,000 farmers and their dependents on more than 80,000 hectares of farmland in developing markets.

More than £6 million has been invested back into Ghanaian cocoa communities as a result of our Fairtrade certification. For every bar of Fairtrade Cadbury Dairy Milk, a traceable premium is generated which goes directly to the farmers in Ghana—money which has been spent on projects such as running mobile health units and purchasing equipment for the farmers themselves.

Initiatives such as the Committee on Sustainability Assessment (COSA) study published in 2012 have demonstrated benefits to farmers from certification, in areas such as farming practices, yield and income (RFA and COSA 2012). These results are encouraging though they also show some variation across indicators, certifications and origins. Likewise, the KPMG report commissioned by the International Cocoa Organization (ICCO), published in October 2012, found increases in yield and income among certified cocoa farmers in West Africa (KPMG 2012).

Partnerships for sustainability

Partnership is at the heart of our strategy because we recognize we do not have all the answers to complex socioeconomic problems. Partnerships allow us to share funding, training and know-how. This collaboration boosts scale and accelerates development and change in more areas, more commodities, and more quickly than if we were to do it alone. Sustainable sourcing, including certification and verification, is one element of our partnership approach.

In 2011, we increased sustainable sourcing of agricultural commodities by 36 per cent compared to 2010, using verification and certification models including Rainforest Alliance, Fairtrade, Common Code for the Coffee Community (4C), Organic and the Roundtable on Sustainable Palm Oil (RSPO). Our entire EU coffee business is committed to 100 per cent sustainably sourced coffee by 2015, with 4C as a minimum standard.

But our approach goes well beyond simply buying certified products. In coffee and cocoa, we are stepping up our direct investment in supply chain partnerships to deliver greater sustainability.

In November 2012, Mondelēz International announced a new programme, Cocoa Life, in which we will invest a minimum of US$400 million over 10 years in communities in Brazil, Côte d'Ivoire, Dominican Republic, Ghana, India and Indonesia to develop a sustainable cocoa supply from farms in thriving communities, adhering to a clear set of principles with independent verification.

The Cocoa Life vision is for empowered, thriving cocoa communities as the essential foundation for sustainable cocoa. Cocoa Life's approach is to create win-win relationships and benefit farming communities by working with partners in five key ways: higher incomes from more productive farming; community empowerment; business skills and increased incomes from sources other than cocoa; inspiring young people; and conserving the environment.

This followed a commitment in October 2012 of an expanded effort to make our coffee business more sustainable. Coffee Made Happy—another Mondelēz sustainability initiative—will invest a minimum of US$200 million to empower one million coffee farming entrepreneurs by 2020. The programme is designed to help the next generation of farmers—inspiring, training and building their capacity to improve their livelihoods and attract new generations back to the small-scale farming sector. The approach builds on our previous commitment to sustainably source 100 per cent of European coffee by 2015.

These approaches take us beyond certification and a focus on compliance with standards. They are characterized by direct investment in origins, a commitment to transparency and a focus on outcomes. They have the aim of achieving sustainable supplies from thriving farming communities. They build on our previous experience in programmes such as the Cadbury Cocoa Partnership and they put farmers at the center of a holistic approach co-created with our partners from the public, private and non-profit sectors.

5.9. Marine Stewardship Council[98]

Fishery certification and eco-labelling: Sustainable seafood sourcing as a force for change

The growth of fishery certification and eco-labelling: Public awareness and the aligning of corporate purchasing policies with sustainable sourcing

The practice of certifying and eco-labelling fish and fish products has seen tremendous progress in the last couple of years and there is increased global recognition of the role that eco-labelling can play in the marketing and conservation of seafood resources.

Increased awareness and concern of the public of the state of fisheries resources helped to trigger an alignment of private sector purchasing policies and practices with sustainable sourcing of seafood. The use of fishery certification and eco-labelling as a mechanism to channel market forces in support of sustainable fisheries has, over the years, evolved from being an innovative concept with potentially limited application in a few niche markets to a much broader practice with mainstream application.

The growing importance of eco-labelling is confirmed by the experience of the Marine Stewardship Council (MSC). Today, over 7 per cent of world fisheries are certified to the MSC standard and over 20,000 products are sold in 106 countries with the MSC eco-label. Furthermore, there are an increasing number of cases of whole country and multinational commitment to work to support fisheries working toward certification. These developments hold promise for a continuing uptake of eco-labelling in the fisheries sector in the future.

The initial advent of certification and eco-labelling within the fisheries sector was met with some caution by government, industry, fisher organizations and other stakeholders. Some of the key concerns related to issues around the perception that eco-labelling might constitute a barrier to trade, the accessibility of developing world fisheries to fishery certification schemes, and uncertainty about the viability of certification as a tool to make a meaningful contribution to environmental improvements.

An international framework

The most direct response to some of these issues at the international government level was the development of the FAO *Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries* which were adopted in 2005. The guidelines outline a set of organizational principles, requirements and criteria for the minimum substantive content of standards and requirements for procedural and institutional arrangements of fishery eco-labelling schemes. A key objective of the FAO guidelines was to ensure that eco-labelling and certification schemes operate transparently, are accountable, independent of vested interests and that they operate without discrimination.

At the certification programme level, and specifically in the case of the MSC, stakeholder concerns were addressed by ensuring adherence to international guidelines and requirements such as the International Social and Environmental Alliance (ISEAL) Codes of Conduct and the then newly developed FAO eco-labelling guidelines.

MSC tools and methodologies: Sensitive to developing countries' needs

In addition, special tools and methodologies were developed to ensure relevance and equitable application of the MSC standard to sustainable small-scale, developing world and data-limited fisheries. Some of the tools introduced included the Risk-Based Framework, which was developed to enable certification bodies to assess data-limited fisheries to the MSC's standard, and the development of specific guidance which was put in place to ensure certifiers are able to take informal and traditional management systems into consideration when assessing small-scale fisheries against the MSC standard.

The development of these tools, coupled with enhanced engagement with developing country stakeholders, is leading to increased participation of developing country fisheries in certification. The proportion of developing country fisheries participating formally in the MSC is now on the increase. Yet, at 8 per cent of total certified fisheries, the number of developing world fisheries is still more measured compared to the number in developed countries. There are, however, a significant number of fisheries that are in full assessments or have had a pre-assessment or are waiting to make improvements in the fisheries before venturing to full assessment. As the market for certified products expands beyond the more traditional "early adopters" market, the demand for a more diverse species range of certified products will translate to increased participation of developing country supply fisheries in the MSC programme.

In the early years of development, a key focus area was to establish the concept of fisheries certification as a marketing and conservation tool and to demonstrate the potential economic and ecological value of certification. The concept of eco-labelling is now much more firmly established and with this a different set of opportunities and issues have emerged that inform both how stakeholders engage with certification and how the process and practice of fishery certification and eco-labelling continues to evolve in response to the external environment.

The importance of credibility in a world of multiple standards and certification schemes

A key development that followed the successful uptake of eco-labelling in the fisheries sector was the emergence of a number of new fishery certification schemes. Associated with this

98 This contribution was prepared by Dr. Oluyemisi Oloruntuyi, Programme Manager, Developing World Fisheries Team, Marine Stewardship Council.

development was the concern among stakeholders of potential for multiple eco-labels to lead to stakeholder confusion. This development led to stakeholders becoming more concerned and demanding of how existing certification programmes demonstrate independence, impartiality and consistency with international guidelines such as the *FAO Guidelines on Eco-labelling*, *ISO Guides* and *ISEAL Codes of Conduct*. In addition to concerns about institutional arrangements that provide assurance of independence, impartiality and competency, there has also been a focus on consistency of certification programmes with best practices in fisheries management.

The need for some assurance about the credibility of each of the existing certification programmes and their consistency with international guidelines and requirements has led to a rise in the importance of external evaluations and benchmarking of certification programmes by independent organizations. These external evaluations seek to conduct assessments of certification programmes against certain prescribed criteria designed to assess the credibility of individual certification organizations.

The FAO has also identified this as an important area of need for its constituent members and is currently developing an evaluation framework that can be used by organizations to assess conformity of private and public eco-labelling schemes with the FAO Eco-labelling Guidelines. In the meantime, other comparative evaluations have already been carried out or are in the process of being implemented by other stakeholder groups including governments (e.g. the French government's review of seven eco-labelling schemes conducted in 2009)[99]; NGOs such as WWF (see Accenture 2009) and industry (see Seafish 2009).

Demonstrating impact of fishery certification

Closely related to the public interest in the credibility and robustness of standards and institutional arrangements and processes is the growing interest in the actual social, ecological and economic impacts of certification on fisheries and on those that depend on fisheries for their livelihoods. With just above 10 years of existence and with active uptake occurring largely in the last 5–6 years it may be considered early to start to see substantive impacts of fishery certification. Nonetheless, initial studies do in fact point to significant gains being made as a result of engagement of fisheries in certification. Some of the benefits identified include price increases for fishery participants, improvements in research and management, improved ecological outcomes and in some instances empowerment of fishers at the community level.

Stakeholders will continue to be interested in understanding how their support for seafood sustainability in the market is translating to real benefits on the ground. The ability to demonstrate social, ecological and economic impact is important to ensuring continued stakeholder engagement and support for certification in the future. Therefore, the development of a system-wide monitoring and evaluation mechanism that allows for comprehensive and scientific collection and analysis of data on certification and its impact is integral to the future of certification. Such a comprehensive monitoring and evaluation system will not only provide value in terms of demonstrating impact but will also provide a useful feedback loop to understand outcomes of programme strategies and identify areas of programme improvement.

Balancing the requirement of best practices and cost and complexity implications

The potential for certification to impact positively on fisheries is generally a function of the robustness of the certification processes, the certification standard and associated performance requirements. It is thus important to ensure the continued quality and robustness of certification processes and performance requirements. In order to deliver substantive environmental benefits, standards must respond to new knowledge in fisheries science and ensure the certification standard integrates global best practices. This must be done while at the same time ensuring consistent and equitable application across fishery types and regions and also ensuring that the integration of best practices within the scope of the certification programme acknowledges the need for balance between best practices and the potential cost and complexity implications of integrating new developments and improvements within the programme. Engagement with a diverse range of stakeholders in the process of making programme improvements through proactive consultation and solicitation for input plays a vital role in ensuring such balance.

The issue of costs of certification is also an area of concern for stakeholders. The dilemma for certification programmes is that ensuring consistency of standards and assessment process with international guidelines such as the FAO, ISEAL and ISO adds robustness and credibility to the system but, in turn, results in increased costs of certification for stakeholders.

Identification of opportunities for efficiency gains and reduction of cost and complexity is a necessary undertaking for fishery certification and eco-labelling to remain a viable mechanism to provide economic incentives to encourage fisheries to work toward sustainability. As part of its integrated strategic plan over the next 5 years, the MSC, for example, has committed to review cost and speed of the certification process by reforming rules and procedures associated with certification while maintaining robustness of the assessment process. An initial demonstration of commitment to this plan is the collaboration between the MSC and the Aquaculture Stewardship Council (ASC) to employ a common chain of custody for certified seafood from wild caught and fish farm units, which will lead to reduced costs for users.

Fishery improvement partnerships to enhance accessibility for developing countries

Ensuring increased participation of small and developing world fisheries in certification continues to be important. In addition to ensuring that operational translation of performance requirements takes into account data limitations and informal

99 www.ofimer.fr/Pages/Ofimer/Publications.html.

attributes of sustainable developing world and small-scale fisheries, there is recognition that some of the challenges are associated with fishery management including problems of overfishing, illegal fishing and limited control mechanisms in fisheries. Efforts to increase developing world fishery access to certification must embrace mechanisms that help address some of these performance-related issues in developing world fisheries.

A key trend that is emerging with significant potential to work around these issues is the development of Fishery Improvement Partnerships (FIPs) which are being set up around developing world fisheries seeking certification. These FIPs usually involve a set of partners working with a fishery to conduct a series of activities to support the fishery progress toward certification. Activities usually include conducting an MSC pre-audit to identify where the gaps are in the fishery and using the outcomes of a pre-audit to develop action plans that outline how gaps will be addressed and the role and responsibilities of different partners in the implementation of the action plan. Partners involved in FIPs include the private sector, NGOs, development organizations and governments. Partnerships are important in providing technical capacity building needed to implement improvements in the fisheries and also with regard to bearing the cost of measures to meet the requirements of standards.

Key determinants of future developments

Another key issue important to trends and developments in fisheries certification is the presence of market demand and support for sustainable seafood products. The extent to which fisheries are motivated to seek certification is a function of the market interest in sustainability issues. Markets in Northern Europe and the United States, as traditional early adopters of green marketing, provided the initial demand for sustainable seafood products. The seafood preferences of consumers, particularly middle-class consumers in these countries, played a significant role in determining the types of fisheries that initially sought certification. The growing interest in sustainable seafood by companies and retailers in Japan, Southern European and other emerging economies will have a huge influence on the types of fisheries that seek certification and will provide incentives for certification of a more diverse product range, including those which are more typical of developing countries fisheries species.

Fishery certification and eco-labelling has come a long way from its early introduction into the scene. It is, however, still an evolving phenomenon. Key determinants of how fishery certification and eco-labelling will continue to develop over time include credibility of schemes, demonstration of impact, accessibility of certification to previously unrepresented fishery types, and engagement with fisheries that need to make improvements before they can be certified. Continued investments and efforts in each of these issues will translate into significant improvements in how certification programmes operate and will be particularly important for developing country fisheries. Furthermore, if the projected number of fishery engagement is realized, this would see fishery certification and eco-labelling continue to have even greater importance as a seafood conservation and marketing tool.

5.10. Oxfam GB[100]

Supply chain governance in the 21st century: Is product certification the right mechanism?

Private standards developed to fulfill a role that was not fully being met by government regulation. Sourcing companies use standards to ensure compliance with regulations in the country of sale, such as those setting a maximum limit for pesticide residues in food, and to manage brand risks from violations of basic human rights in the supply chain, including child labor. And as sustainability reporting has become more common, product certification has become an important way to assure consumers of the social and environmental attributes of products, such that it has become integral to companies' sustainability and marketing strategies. The independence of certification schemes from the sourcing company or retailer is also an important aspect in giving authority to claims a company might make on its own.

From the perspective of civil society, certification as a strategy has much to offer in principle. It is designed to allow farms and workplaces to gain a market reward for meeting defined social and environmental sustainability standards. It allows consumers to make a positive choice in favor of these more responsible products. It can leverage change at an industry level, increase awareness of development issues on which businesses impact, reinforce social protection floors and prompt dialogue between business and civil society which helps to bring about positive change.

The impact of private standards and certification schemes: Promises kept?

The key question is: To what extent is certification delivering against its ambitious aims? Approximately 60 per cent of schemes have no external verification and so their independence must be questioned. But what of the schemes that are externally verified, how effective are these? In relation to positive social change, there is a need to make a distinction between target beneficiaries.

Smallholder farmers: Products produced by smallholder farmers were one of the first groups to be certified and here there is significant evidence of positive social change. Improvements in livelihoods include increases in income and food security (see Pound and Phiri 2009; Pound *et al.* 2012) which have led to an increase in school attendance. There have been improvements in productive capacity as a result of the Fairtrade premium and raised levels of savings and investments (Pound *et al.* 2012). The Fairtrade minimum price ensures stable incomes and protects smallholders from price volatility (Nelson and Pound 2009; Vagneron and Roquigny 2010). Smallholders have also benefited from environmental certifications and have been able to reduce chemical use and implement better health and safety procedures (Rainforest Alliance 2013). When smallholder organizations are empowered and organized,

100 This contribution was prepared by Rachel Wilshaw, Ethical Trade Manager for Oxfam GB. Disclaimer: This text presents a personal perspective and does not necessarily reflect the views and opinions of Oxfam GB.

their influence at national and international levels increases (Nelson and Pound 2009).

Waged workers: Certification of products produced with "hired labor" is a more recent development following consumer campaigns highlighting labor issues in global supply chains. Here evidence of empowering social change is more limited. Certification standards rely on the applicable legal minimum wage as a proxy for a decent living standard for workers and their families. From the perspective of a development organization like Oxfam, this is not adequate and can result in the inadvertent certification of poverty. Proactive strategies are required to raise wages toward a living wage. Some certification schemes are starting to consider how workers can be more active participants in improving standards. For example, could waged workers be joint license holders of a certification with the plantation owners? Could emphasis be put on collective bargaining processes working well?

There are a range of issues important for development that certification schemes do not currently address adequately. Certification does not reward continuous improvements over time. It is not designed to meet the specific concerns of the target beneficiaries. It does not evaluate the distribution of costs and risks in the value chain and ensure it is fair for the smaller players. And it is not geared up for emerging issues relating to planetary boundaries, such as water stress, climate change adaptation or soil erosion where less consumption is needed, rather than simply "better" consumption. Certification can even, in certain circumstances, lend legitimacy to inherently harmful industries, as in the case of bio-fuels, "blood minerals" or tobacco.

Certification is based on assessment against a standard and, however good the standard, is only as good as the assessment method used. The predominant method used by social certification schemes is the social audit, in which an expert in the standard assesses compliance and either gives the auditee a clean bill of health or sets corrective actions to be closed. Audits are predicated on problematic working conditions being fixable by setting a sufficient number of "corrective actions". However, the most problematic issues are not incidental but systemic in nature, and audits do not deal effectively with issues which require a perspective from workers to know whether certain criteria are met or not, as vulnerable people lack trust to speak openly to auditors. Oxfam's briefing for business 'Better Jobs in Better Supply Chains' identified over-reliance on auditing as a significant obstacle to the assurance of labor rights in situations of endemic *non*-compliance (Guardian 2011).

But if the snapshot audit is not a fit for purpose tool for social certification, what else is needed?

Some companies have tens of thousands of suppliers. How to assure standards across such a complex supply chain? Some solutions include:

- Pricing mechanisms that deliver additional value to workers as well as smallholders, beyond premiums.
- Grievance mechanisms that are trusted, with a track record of resolving issues.
- Mechanisms for workers to discuss and voice concerns collectively, rather than individually.
- Mechanisms for claims to be challenged by local NGOs and trade unions.
- Combined public-private initiatives for social and economic upgrading.

Future importance and use of private standards and labels

It is in the interests of all proponents of certification to know that they achieve in practice what they aspire to. We anticipate an increase in stakeholder demand for monitoring and evaluation and independent impact assessment, to check the claims of certification bodies and the differential impact of certified compared with non-certified factories and farms. This includes impact assessment that incorporates the perspective of the target beneficiaries, which looks at differentiated impacts based on gender, and is published. Related to this, companies will need to report more transparently. Currently, companies produce long sustainability reports, but there is very little meaningful information on which civil society and investors can assess their performance in relation to social aspects of sustainability, including human rights.

Another trend is that as companies rely more on certification as a tool to deliver their sustainability targets and for their consumer messaging, retailers and multinational companies will increasingly seek to influence the governance of the schemes. Certification commonly occurs in value chains in which the greatest proportion of value is taken at the retailing end of the chain. There is a risk that the interests of people whose well-being is ostensibly being guaranteed will be over-ridden by companies who want to see certification made easier, cheaper, and more available across their product range. Producer and worker representation in the governance of certification schemes is key.

There will, thus, be greater challenges to the credibility of certification schemes as a tool to deliver change efficiently and effectively. If we were designing a supply chain governance system, now in the twenty-first century, would we select these certification schemes as a market lever to overcome poverty, promote human rights and protect dwindling natural resources? Can respect for human rights or relationships between an employer and workers be measured by a certification system? Can a system designed to promote consumption be used to reduce resource use? How can the role of Government in trade and market governance be reactivated? What is needed is a fundamental review of certification as a supply chain governance system, and fresh thinking about new approaches to deliver its aims, keeping the best elements and addressing the more glaring gaps.

Opportunities and challenges for developing countries

Certification is seen as costly and cumbersome by small producers and in many instances, a large percentage of certifiable produce is not sold as "certified" due to lack of market demand. Growth will depend on farmers seeing certification as

relevant and worth the investment. If farmers are able to capture secure markets and farm level investment by other means, social certification may be perceived as less relevant to them, particularly as they export more of their products to Asia and the Middle East where there is currently less active consumer interest in how products are made.

On the other hand, there is a growing market for sustainable production in the South. The extent to which certification bodies are able to capture this market will depend on trust by consumers, investment in smallholder farming and messaging by sustainability organizations.

Opportunities and challenges for lead firms and importing companies

For leading companies, the benefits of selling an ever increasing percentage of their sales of certified can be consumer loyalty. Other opportunities include:

- Increasing the pool of small-scale producers capable of supplying to them beyond the 2–12 per cent of farms that currently have land, are organized and are able to supply modern export markets. This could be achieved by investing in the capability of the next level of farms, which could increase market supply as well as reduce poverty and inequality.
- Increasing the number of female small-scale producers able to sell certified products by targeting inputs and training, taking into account their different needs and circumstances compared with male producers (including lack of title to land).
- Transition from a product-certification-based scheme to a wider system of supply chain governance based on sustainable outcomes rather than conformance criteria.
- In any standard making or governance body ensure the opinions and needs of the most vulnerable primary producers or workers are represented, with clear independent dispute resolution mechanisms.

However, making use of certification schemes to help make their sourcing more sustainability-driven also brings challenges for lead companies, for example:

- Justifying the additional costs they incur in areas where evidence of benefits is weak.
- The sheer number of certification schemes in existence offering slightly different types of assurance to the consumer.
- The practical challenge of incorporating their messages on to packaging labels.
- The challenge of delivering targets against a range of emerging sustainability issues—such as water use and carbon emissions.

Potential roles for NGOs

NGOs such as Oxfam can play a range of roles. These include:

- Continuing to lead effective campaigns and advocacy founded on good quality research. These promote understanding of social and environmental issues, act as a spur for change and increase the business case for companies to take action.
- Developing practical tools and frameworks that companies can draw on.
- Communicating case studies which give credit where it is due and have a demonstration effect.
- Facilitating companies' access to networks of local NGOs which can give them feedback and potentially partner with them
- Facilitating impact assessment. One example of this is the plan by Oxfam to open-source its poverty footprint methodology during 2014.

The role of NGOs is likely to expand as companies lack the skills and knowledge to assess social and environmental impact and the credibility to attribute positive change to their own actions. There will be an increased opportunity for NGOs who wish to engage with companies to find sustainable solutions as well as to highlight problems within the framework of a rights-based approach. These NGOs will need to enhance their skills and in some cases explore new organizational models (such as consultancies owned by charities) to meet this need. There will continue to be a need, though, for the traditional campaigning and researching role of NGOs with development expertise and the trust of local communities.

Strong skills in gender analysis in both companies and NGOs will become more important as poverty has a female face: women form the majority of those living in extreme poverty, the majority of workers in global supply chains, and a significant proportion of small-scale farmers, yet interventions are often "gender-blind", for instance technical inputs and training for small-scale farmers are often available only to men. Many companies do not yet "get" the importance of gender; this has to change.

The role of development assistance

International development agencies like UNIDO could invest in technical inputs to small-scale agricultural producers, particularly women, linking their capacity building to the demonstrable effectiveness of certification schemes, and advocating to Southern governments to provide effective regulation and inspection so that private voluntary standards are not carrying too great a responsibility for assuring standards or operating in a regulatory vacuum.

Box 5.1. *Oxfam's "Behind the Brands" campaign and recent reports*

In February 2013 Oxfam launched a global campaign, "Behind the Brands". It takes as its starting point the fact that over the past century, powerful food and beverage companies have enjoyed unprecedented commercial success. But they have grown prosperous while the millions who supply the land, labor and water needed for their products face increasing hardship. Now, a rapidly changing environment, affected communities and an increasingly savvy consumer base are pushing the industry to rethink "business as usual". In this report, Oxfam assesses the social and environmental policies of the world's ten largest food and beverage companies and calls on them to take the critical next steps to create a just food system, see www.oxfam.org/behindthebrands.

The website carries a scorecard that enables readers to delve into the scoring system used to rate and rank the companies, including modest scores available to companies using product certification, particularly in relation to smallholder farmers. The campaign highlights the fact that these private standards can and do make a positive contribution to poverty alleviation in the sector, but that these need to be accompanied by a range of deeper transformational changes that address what Oxfam sees as a broken global food system.

In May 2013 Oxfam published a report jointly with Ethical Tea Partnership called Understanding Wage Issues in the Tea Industry. This found wages that were legal but very low in some locations, and to be no higher on certified estates than on non-certified estates, see http://oxfam.org.uk/teawages. On the other hand, in a report published the same month jointly with produce company IPL (owned by ASDA), Exploring the Links Between International Business and Poverty Reduction: Bouquets and Beans from Kenya Oxfam found that standards, including wages, on Fairtrade-certified flower farms and packhouses were significantly higher than on non-certified ones, so the picture is clearly a mixed one, see http://policy-practice.oxfam.org.uk/publications/exploring-the-links-between-international-business-and-poverty-reduction-bouque-290820.

5.11. World Forum of Fish Harvesters and Fish Workers[101]

Supporting the artisanal, coastal, and small-scale fisheries from a market perspective: The development of the Artysanal© standard

Small-scale fisheries and the rising importance of private standards

While fishery is a big and dynamic business today, much of the production is still occurring on a small-scale. In fact, there are at least 25 million small-scale fish harvesters and 100 million fish workers operating around the planet, placing artisanal, coastal and small-scale fisheries among the largest job providers worldwide. Present in countries of both the South and North, artisanal, coastal and small-scale fisheries are offering many different production systems for a large variety of seafood products: groundfish, flatfish, crustaceans, mollusks, algae, etc. These production systems, however, have a lot in common: the defense of cultural traditions, the protection of local communities and the conservation of the ecosystems. As far as the ecological aspects are concerned, artisanal, coastal and small-scale fishers often utilize very selective and/or passive fishing gears. When properly managed they are most likely to protect fish stocks and the environment. Moreover, artisanal, coastal and small-scale fishing boats emit far less greenhouse gas than industrial vessels due to two major reasons: (1) fishing grounds are close to shore, and (2) in many cases there is no fuel consumption since fishers are often using passive fishing gears.

Until the early 2000s, the public within the Northern countries knew very little about the world of fishing. The management measures taken in the different fisheries worldwide stood either on internal policies undertaken by the fisheries' managers themselves, or on legal regulation(s) defined at national, regional, or international level(s).

With the new millennium emerged new requirements for private companies: legal obligations to produce activity reports from environmental, social and economic points of view, and moral obligations to the civil society to adopt responsible production practices. Transparency on fisheries stakeholders' practices has become a new trend, making the public more aware of this "silent world".[102] Aware of this reality, food distributors (in the EU, Japan, the United States, etc.) started, in cooperation with environmental NGOs, to screen the seafood range offered in their stores (retail, cash and carry, and food service sectors). Distributors first reacted by withdrawing "controversial seafood species" (i.e. endangered, suspected to come from not responsibly managed fisheries, not offering enough traceability guarantees, etc.). After this, their second step was to bring to the public the justification of their choice to keep identified seafood products (e.g. species, origin) within their product range. The easiest way to achieve this would have been to take advantage of existing official—and independent—stand-

101 This contribution was prepared by Margaret Nakato, Executive Director of the World Forum of Fish Harvesters and Fish Workers (WFF).

102 In reference to the French documentary film co-directed by the famed French oceanographer Jacques-Yves Cousteau and a young Louis Malle in 1956. "The Silent World" is noted as one of the first films to use underwater cinematography to show the ocean depths in color. Its title derives from Cousteau's 1953 book The Silent World: A Story of Undersea Discovery and Adventure.

ards to determine which seafood products/species came from "responsibly managed fisheries", and which did not. Unfortunately, and despite the attempts of different public authorities (e.g. the European Commission, France, the Scandinavian countries and in the UK) to set up commonly recognized standards, in that regard no public standard has been issued. Therefore, European distributors (e.g. Ahold, Carrefour group, Intermarché) decided to issue their own fishery standards, but they were then accused by environmental and "green" NGOs and the public to be "judging their own case". That explains why private standards from environmental NGOs and/or fisheries stakeholders have shown up in recent years.

Certification areas of particular future importance

The development of modern food retailing has greatly modified the food supply chains worldwide during the last 40 years. The retail sector has been reshaping the production world (e.g. cropping, farming, animal breeding) in terms of new obligations. The period between 1980 and 1995 focused on food safety considerations, and from 1995 to 2005 on food quality. Since 2005 food distributors have been increasingly focusing on traceability issues—the recent "horse meat scandal" in Europe is a perfect example of the remaining work to be achieved in this regard. Meanwhile, eco-considerations such as the protection of the environment, support of eco-friendly production systems, reduction of pollutants or lower footprint models have gained importance. Even if the ongoing economic downturn affecting the middle classes in Northern countries is currently pushing the public's sustainability considerations somewhat into the background, there is absolutely no doubt that "responsible socioeconomic practices" are going to be the next concern of the major food distributors in a very near future. The growing support of the public to their domestic artisanal fishing fleets in countries strongly hit by the economic crisis and/or by increasing restriction measures[103] has been a living example of this new reality (e.g. Italy, Portugal, Spain).

While eco-considerations are constantly gaining prominence, food safety and food quality to consumers are no longer an issue in the context of private standards and certifications. In fact, safety and quality are an obligation for food producers, not an option. By contrast, the major changes will take place within the sustainability area relating to environmental issues (ecological footprint, protection of the coastal/water environments, healthy management of the considered seafood stocks, lower consumption of natural resources like oil and water) but also—and most of all!—socioeconomic issues (which is a true challenge for now). To be "a friend of the fish" is a good start as far as sustainable stock management is concerned. But to become "a friend of the fisher" too is the key for a long-term management of the fisheries.

Opportunities and challenges for fishers, producers, and exporters in developing countries

The important thing to bear in mind is that private fishery standards are marketing tools. They aim to make it possible for a labelled product to be distinguished from (unlabelled) mass products on the market. Having said that, the private labels cannot be considered independently from the food distributors and retailers that are willing to promote them. Therefore it is not easy to answer the question of how changes in the private standard landscape will affect fishery exports from developing countries. Generalizing is difficult as outcomes depend on the size, the geographic development, and the business strategy of the considered distributor(s). However, based on our 15 years of experience in this regard, we can certify that an international distributor and retailer may offer small-scale fishers from developing countries many different benefits:

- A better understanding of the notions of food safety, food quality, and traceability (and the daily support to achieve them).
- The possibility to make the considered fishery benefit from a former business success story between the considered distributor and other small-scale fishery(ies) elsewhere in the world.
- The access to a market usually much wider than their historical one.

In terms of business relationship, the benefits of the use of private standards for small-scale fishers from developing countries may include the following:

- More transparency within the fish supply chain (the chain being shortened with a direct relationship between fishers and distributors).
- A clear, precise, and transparent price analysis across the fish supply chain.
- The development of long-term business relationships between the distributor and the small-scale fishers from developing countries (usually, seafood contracts go through annual call-for-tenders; this is typically not the case with the promotion of products certified against fishery standards).
- The possibility to reward the fishers with a premium (price-premium and/or share of the benefits at the end of the fiscal exercise, etc.).

The notions of safety/quality/traceability are key. However, there must be a real support from local authorities to enable small-scale producers to reach the safety standards in place within the export countries (e.g. EU, Japan and the United States). It is not worth promoting "responsibly produced seafood products from small-scale fisheries" if, ultimately, they cannot be exported due to quality concerns.

Emphasis should be placed not only on the importance of traceability and transparency but also of reporting. To make things in the correct manner is good, but not enough. Small-scale producers must be able to demonstrate at any time that they are doing it right. Records are the backbone of any certification system but, based on our experience, small-scale fishers are not prepared to deal with papers. Therefore, strong support from local representatives from the authorities, civil society and the private sector should be built prior to considering the fishery certification itself.

103 Artisanal fishers have been suffering from an even more binding framework: fewer subsidies (on oil, for instance), more fisheries closures, increasing minimum fish sizes, shorter fishing seasons, etc.

At the same time, there is no doubt that fishers from one area or country may benefit from learning from the experience with the considered label that other fishers had, even if they operate elsewhere and/or with other seafood species.

Opportunities and challenges for lead firms

The changing landscape of private standards and certifications in the fishery sector holds opportunities and challenges also for Northern lead firms and importing companies. Among the main challenges for Northern distributors will definitely be:

- Ensuring the credibility of the standard both in terms of substance (its content) and form (how the standard is truly handled).
- The true consideration of all the sustainability elements (not only the environmental but also the socioeconomic ones).
- The credibility of the certification process (to be a truly independent process, really taking into consideration the public's potential objection(s)).

Further challenges will include their ability to identify enough fisheries and seafood to be certified, to clearly distinguish between industrial and small-scale fisheries that represent totally different realities (environmental, social, and economic) and to keep the price of the certification process as low as possible for fishery stakeholders to ensure no one is excluded.

Finally, it will also be crucial for Northern lead firms to issue clear, precise and reliable performance indicators (environmental, social, economic) to assess the relevance of the certified fisheries, and to make their label(s) understandable to the public with clear, precise and simple arguments. Marketing and communication are key for a long-term acceptance by consumers.

Besides these challenges, the main benefits resulting from the use of private standards for lead firms and importing companies will be to appear as a "responsible company" toward the authorities, their stakeholders, their consumers and the civil society; to fuel the development of their private labels with responsible seafood products (private labels are the number-one priority of modern food retailers); and to maintain a privileged access to seafood sources (within a context of increased competition with emerging countries—including the BRIC countries, Iran, Mexico, Turkey, etc.). In addition, they will also benefit from being able to better control both the price of their seafood supplies by shortening the supply chains, and the safety, quality and traceability of the related seafood products.

The role of development agencies

Meanwhile, development agencies such as UNIDO can also play a role and contribute to strengthening local capacities to comply with private standards, for example by helping to structure local networks to bring together fishers, local NGOs, and the private sector (e.g. the World Banana Forum organized by the UN FAO), or, by supporting small-scale fishers, if needed, to get access to funds for related investments (certification process, fishing operations, fish processing/packing), or by training small-scale fishers on safety and quality issues. Other key areas of intervention for development agencies might be to give small-scale fishers assistance on traceability and recording requirements (the chain of custody as requested by any certification process), to help them set up a computerized traceability management system, and to independently compare existing fishery standards with regard to their working area, scope, principles and criteria, certification process, certification cost, etc.

The work of the World Forum of Fish Harvesters and Fish Workers: The Artysanal© label

At the same time, the WFF—as an international organization that brings together small-scale fisher organizations from around the world—decided to get active in the arena of certification and labelling. In 2010, the Executive Committee of the WFF, in cooperation with willing partners such as the Responsible Fishing Alliance[104], decided to start working on an international label of responsible fishing for artisanal, coastal and small-scale fisheries, with the intention to make it possible for them to distinguish themselves from the industrial fisheries on the market. This label named Artysanal© is not meant to be an eco-label. Moreover it should not be seen as "one more label on the market" as it has no equivalent on a global scale insofar as it considers the environmental, social and economic dimensions of sustainability (as requested by the FAO *Code of Conduct for Responsible Fisheries*[105] and the FAO *Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries*[106], and insofar as it takes a holistic approach toward responsible fishing, introducing qualitative components to the measurements of best environmental, social and economic efforts under existing circumstances. In a next step, fisheries' pre-assessments against the Artysanal© standard are to start soon within selected pilot fisheries in both Southern and Northern countries. The first labelled seafood products shall be available on the market by the end of 2013. The objective is that such marketing of seafood labelled by artisanal, coastal and small-scale fishers will establish durable partnerships between producers and consumers throughout the fish supply chain.

5.12. World Wide Fund for Nature[107]

Improving sustainability in the market place through voluntary standards?

Rising global demand for food, fiber and fuel is placing increasing pressure on renewable resources, biodiversity and people who depend on them for their living. We are using natural resources faster than they can be renewed, creating serious consequences for our planet.[108] Headlines report food shortages, increasing commodity prices and concerns about energy

104 http://www.responsible-fishing.org
105 http://www.fao.org/docrep/005/v9878e/v9878e00.HTM
106 http://www.fao.org/docrep/012/i1119t/i1119t00.htm
107 This contribution was prepared by Mireille Perrin, at the time of writing Deputy Team Leader, Market Transformation, World Wide Fund for Nature (WWF).
108 See 2012 Living Planet Report by WWF at: http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/

supplies—yet forecasts suggest the population will grow by 50 per cent by 2050 and per capita consumption will double.

Sustainability standards as tools and catalysts for positive change

Voluntary sustainability standards are one among several tools that can help answer the challenge of feeding, housing, clothing and transporting nine billion people by 2050 without breaking the planet. Already, we are seeing companies like Unilever commit to 100 per cent sustainable sourcing, and similar groundbreaking commitments from the 19 Consumer Goods Forum companies that have committed to taking deforestation out of the supply chains by tackling the five largest drivers of LULUCF[109] emissions (beef, palm, soy, pulp and paper, and timber). Over the past 4 years, certified palm oil produced more responsibly according to the standard of the Roundtable on Sustainable Palm Oil (RSPO) increased from less than 1 per cent of world palm oil production in 2008 to more than 13 per cent in 2012.

Voluntary sustainability standards provide an opportunity to catalyze change in some of the most important global commodity markets by setting better practices and targets to reach for more responsible production. Developed through multi-stakeholder processes, they enable all supply chain actors to reach consensus on the key impacts and performance standards for a given commodity, and agree to a credible system for verifying the sustainability of a commodity against which buyers base their purchase decisions.

These voluntary market-based mechanisms are partly a response to government failure; they are also an opportunity for companies to achieve greater economic benefits, let alone positive environmental and social change. In 2010, the ISEAL 100 survey showed that 78 per cent of interviewed corporate representatives stated "increased operational effectiveness" as the main benefit of using private voluntary standards.[110] Recent research by WWF shows that RSPO certification helped reduce worker turn-over by 6 per cent and the rate of accidents by 42 per cent. It also contributed to increase market penetration by 25 per cent in Europe thereby offsetting certification costs (WWF 2011). By 2010, through the Better Cotton Initiative, Pakistani farmers reduced their use of water by 37 per cent, pesticides by 47 per cent and chemical fertilizer by 40 per cent over 170,000 hectares, and increased income in some cases by up to 50 per cent.

Companies also perceive standards as helping to meet customer demand (45 per cent) and improve their reputation (31 per cent) (ISEAL 2011). Interestingly enough, and as just explained, this is not the prime reason for them adopting such voluntary standards. While consumer demand plays a role for driving standard use and uptake, notably in developed countries such as in Europe and North America, the greatest leverage driving standard use and uptake is supply chain demand—the kind of concerted effort on the part of multiple actors (including brands, traders, producers, financial institutions, policy makers, even development agencies and banks) and not just in developed countries, but also in emerging markets. Over the last decade or so, those efforts have resulted in the launch of several commodity roundtables such as the Roundtable for Responsible Palm Oil (RSPO), the Roundtable for Responsible Soy (RTRS), Bonsucro, The Better Cotton Initiative and the Aquaculture Stewardship Council (ASC). They built upon the earlier experience and success of the Forest Stewardship Council (FSC) and Marine Stewardship Council (MSC) launched in 1994 and 1999 respectively.

The key challenge: Promoting uptake in emerging markets through relevance and accessibility

There is one key challenge for members along the supply chain to commit to producing and buying against the standards developed, and ensure that positive impact is measurable and credible. These voluntary sustainability standards have to make sense for emerging markets where the bulk of commodities are produced and consumed, particularly Brazil, India, Indonesia and China. To take one example, China is responsible for 36 per cent of global seafood production and 32 per cent of seafood consumption; sustainable seafood globally will not be possible without the involvement of Chinese companies. Uptake in emerging markets is dependent on both the relevance and accessibility of private standards to those market players.

Relevance: At a basic level, standards help producers and companies manage for carbon, water and biodiversity values, thereby ensuring reliability of supply and food security. Standards need to do a better job of incorporating social and economic indicators and making the link to poverty reduction. The majority of the world's poor are farmers, and half the world's farmers cannot feed their own families. Half the Earth's land is used for food production; the rural poor can and must play a role in regional and global food security, especially as weather shocks, oil price increase and supply constraints cause disruptions in global supply chains. Standards have to make business sense for large and small companies alike.

Accessibility: For smallholders and small producers, the cost of standards compliance continues to represent a barrier to adopting more sustainable production practices. Costs can be reduced through a conducive enabling environment (e.g. start up grants, tax incentives), technical assistance and support (e.g. training, access to credit) and the active engagement of international organizations, development agencies and development banks. For example, the creation of a facility that would help shift food production from cleared, natural forests on to degraded lands in key productive countries, and reward palm oil or soy producers for doing so through certification, would go a long way toward addressing commodity-driven deforestation and improving farmers' livelihood.

109 LULUCF stands for land use, land-use change and forestry.

110 In 2010, the International Social and Environmental Accreditation and Labelling (ISEAL) Alliance, a global association for social and environmental standards, conducted a study to take the pulse of standards systems users in business, government and civil society. It interviewed 100 thought leaders, 80 of them from business. The final sample includes respondents based in 17 countries, though the large majority are based in the United Kingdom (42%), in continental Europe (34%) and the United States (17%). Respondents from Australia, Brazil, Canada, Costa Rica, India and Tunisia also contributed to the study (ISEAL 2011)

Promoting sustainability standards: A call for multi-stakeholder efforts

The transition to more responsible and sustainable production through voluntary standards and certification schemes requires the engagement of all supply chain actors and influencing parties. NGOs have a role to play—for global NGOs, such as WWF, we can work with companies from their headquarters down through their supply chains and ensure that standards are credible and effective in driving positive economic, social and environmental change. Scientists, universities and research institutions can provide recommendations on ways to strengthen standards and help develop methodologies to track their "on the ground" impacts. Companies have a responsibility for communicating to consumers, in addition to using standards in their own operations and throughout their supply chains. The annual marketing budget of a Fortune 100 company is equivalent to what all conservation organizations have spent over the last 50 years; Nestlé products reach billions of consumers. Large multinationals can surely help promote visibility and awareness of sustainability standards. Governments can help direct public funding to sustainable production, and implement trade policies that support sustainable sourcing. We also need the engagement of financial institutions as finance underpins commodity production and trade. Meanwhile, development agencies like UNIDO should provide technical assistance to SMEs and smallholders to help them comply with the standards requirements and certification processes. They also have a role to play in terms of market access opportunities by helping to forge links between suppliers in developing countries and private sector actors in developed country markets. The ultimate goal is slowing climate change, preserving fish stocks and healthier oceans, conserving forests and biodiversity, using less water and, of course, ensuring that those who depend most on these renewable resources can earn a decent living.

6 References

Accenture for WWF (2009) Assessment of On-Pack, Wild Capture Seafood Sustainability Certification Programmes, available at http://assets.panda.org/downloads/full_report_wwf_ecolabel_study_lowres.pdf (last accessed 21 November 2013)

Achterbosch, T. (2005) 'Food safety standards in a developing country context: The case of South African groundnuts', Cahiers Options Méditerranéennes 64: 165–78, available http://ressources.ciheam.org/om/pdf/c64/00800052.pdf

Afun-Ogidan, D., Van Seters, J. and Rampa, F. (2012) Regional Approaches to Food Security in Africa: The CAADP and Other Relevant Policies and Programmes in EAC, ECDPM Discussion Paper 128c, Brussels: ECDPM, available at www.ecdpm.org/dp128c

Aliceweb Mercosul (2012) http://www.alicewebmercosul.mdic.gov.br/

An, G. and Maskus, K. (2009) The impacts of alignment with global product standards on exports of firms in developing countries. World Economy, 32(4), 552–74

Asian Development Bank (2011) Asian Development Outlook 2011, Manila: ADB, available at http://www.adb.org/publications/asian-development-outlook-2011-south-south-economic-links

B&M Analysts (2011) A Review of South African and Global Trends In The Food-Processing Sector. Report prepared for the Department of Trade and Industry

BCI.org (2013) 'Measuring success', available at http://bettercotton.org/better-cotton/measuring-success/ (last accessed 21 November 2013)

Bello, A. (2007) 'Ensuring food security—a case for ASEAN integration', Asian Journal of Agriculture and Development 2.1, 2: 87–108

BMZ (2012) Harmonisation and Mutual Recognition of Regulations and Standards for Food Safety and Quality in Regional Economic Communities, Bonn and Eschborn: GIZ

Buzby, J.C., Unnevehr, L.J. and Roberts, R. (2008) Food Safety and Imports: An Analysis of FDA Food-Related Import Refusal Reports. Economic Information Bulletin 39, Washington DC: USDA, Economic Research Service

CAADP (2009) Raising Competitiveness and Seizing Opportunities in Domestic, Regional, and International Market, Pillar 2, Area A: NEPAD, available at http://www.caadp.net/pdf/%28FINAL%29_CAADP_Brochure-Area_A_%281-21-09%29.pdf (last accessed 21 November 2013)

Cairns, A. and Meilke, K. (2012) The Next-11 and the BRICs: Are They the Future Markets for Agrifood Trade?, CATPRN working paper 2012–03, Guelph: University of Guelph, Department of Food, Agricultural and Resource Economics, available at http://purl.umn.edu/122737

Carrefour (2012) Programa garantia desde a origem, available at http://www.grupocarrefour.com.br/sustentabilidade/garantia-de-origem/ (last accessed 21 August 2013)

CEC (2004a) 'Corrigendum to Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on Official Controls Performed to Ensure the Verification of Compliance with Feed and Food Law, Animal Health and Animal Welfare Rules', Official Journal of the European Union, 28 May 2004, available at http://europa.eu./comm/food/food/controls/index_en.htm (last accessed July 2012)

—— (2004b) 'Corrigendum to Regulation (EC) No 852/2004 the European Parliament and the Council of 29 April 2004 on the Hygiene of Foodstuffs', Official Journal of the European Communities, 25 June 2004, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:226:0003:0021:EN:PDF (last accessed July 2012)

—— (2004c) 'Corrigendum to Regulation (EC) No 853/2004 the European Parliament and the Council of 29 April 2004 Laying Down Specific Hygiene Rules for Food of Animal Origin', Official Journal of the European Communities, 25 June 2004, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:226:0022:0082:EN:PDF (last accessed July 2012)

Codex Alimentarius Commission (2010) Consideration of the Impact of Private Standards, CX/CAC 10/33/13, Rome/Geneva: FAO/WHO, available ftp://ftp.fao.org/codex/Meetings/CAC/cac33/cac33_13e.pdf (last accessed July 2012)

Department of Agriculture (2005) Malaysian Farm Certification Scheme for Good Agricultural Practice (SALM) Standard, Kuala Lumpur: Department of Agriculture Malaysia, available at ftp://law.resource.org/my/ibr/ms.gap.2005.pdf

EC/DG Sanco (2008) 'New Rules on Pesticide Residues in Food'. Brussels: European Commission.Fan, S. and Boyd, M. (2009) Understanding Canada-China Food Trade: Behind-the-Border Barriers, Research Reports, Vancouver: Asia Pacific Foundation of Canada, available http://www.asiapacific.ca/

research-report/understanding-canada-china-food-trade-behind-border-barriers (last accessed 21 November 2013)

FAO (2007) Regulations, Standards and Certification for Agricultural Exports. A Practical Manual for Producers and Exporters from Asia, Regional Office for Asia and the Pacific (RAP) Publication 2007/13, Rome: FAO

FAO (2011): Private Standards and Certification in Fisheries and Aquaculture. Current Practice and Emerging Issues, FAO Fisheries and Aquaculture Technical Paper No. 553, Rome: FAO

Filmer, D. and Pritchett L.H. (2001) 'Estimating wealth effects without expenditure data or tears: An application to educational enrolments in states of India'. Demography, 38(1), 115–32

Greenaway, D. and Milner, C. (1990) 'South–South trade: Theory evidence and policy', The World Bank Research Observer, 5.1: 47–68

Guardian (2011) 'Social audits flawed as a way of driving sustainable change', by R. Wilshaw, Oxfam perspective available at http://www.guardian.co.uk/sustainable-business/blog/social-audits-flawed-companies-developing-world (last accessed 21 November 2013)

Guarín, A. and Knorringa, P. (2011) '"New" middle class consumers in rising powers: Responsible consumption and labour standards'. Rising Powers and Global Standards Working Paper No. 1. Manchester: School of Environment and Development, University of Manchester

Henson, S. and Humphrey, J. (2009) The Impacts of Private Food Safety Standards on the Food Chain and on Public Standard-Setting Processes, Paper prepared for 32nd session of Codex Alimentarius Commission ALINORM 09/32/9D-Part II, Rome/Geneva: FAO/WHO, available at http://www.codexalimentarius.org (last accessed July 2012)

Henson, S. and Olale, E. (2011) What do Border Rejections tell us about Trade Standards Compliance of Developing Countries? Analysis of EU and US Data 2002–2008. UNIDO Working Paper, Vienna: UNIDO

Humphrey, J. (2012) Food Safety, Private Standards Schemes and Trade: The Implications of the FDA Food Safety Modernisation Act, IDS Working Paper 2012–403, Brighton: Institute of Development Studies, available at http://www.ids.ac.uk/publication/food-safety-private-standards-schemes-and-trade-the-implications-of-the-fda-food-safety-modernization-act (last accessed 21 November 2013)

Humphrey, J. and Schmitz, H. (2008) 'China—Growth Engine or Obstacle for Asian Developing Economies?', Zeitschrift für Wirtschaftsgeographie 52(1), 50–66

International Monetary Fund (IMF) (2011) New Growth Drivers for Low-Income Countries: The Role of BRICs, Washington DC: IMF, Strategy, Policy and Review Department

International Trade Centre (ITC) (2010) South Africa: A Potential Market for Agrifood Products from Africa, ITC: Geneva

ISEAL Alliance(2011) 'The ISEAL 100 Survey: Business and Certification Beyond the Tipping Point', available at http://www.isealalliance.org/online-community/news/the-iseal-100-survey-business-and-certification-beyond-the-tipping-point (last accessed 21 November 2013)

ISO (2010) International Standards and 'Private Standards' ISO/TC 34 SC17, Geneva: International Organisation for Standardization, available at http://www.iso.org/iso/private_standards.pdf (last accessed July 2012)

ISO and UNIDO (2008): Fast forward. National Standards Bodies in Developing Countries, Geneva: ISO.

ISO and UNIDO (2010) Building Trust. The Conformity Assessment Toolbox, Geneva: ISO

Jaffee, S., Henson, S. and Dias Rios, L. (2011) Participation of Smallholder Farmers in Supply Chains to High-Value Markets: The Role of Exporters as Gatekeepers of Value Chain Participation, Report 62324-AFR, Washington DC: World Bank, available at http://siteresources.worldbank.org/INTARD/Resources/Making_the_Grade_ePDF2.pdf (last accessed July 2012)

Jaffee, S. and Masakure, O. (2005) 'Strategic use of private standards to enhance international competitiveness: Vegetable exports from Kenya and elsewhere', Food Policy 30(3), 316–33

Jensen, M. F., Keyser, J. and Strychacz, N. (2010) Non-Tariff Barriers and Regional Standards in the EAC Dairy Sector, World Bank Africa Trade Policy Notes No. 2

KPMG (2012) Cocoa Certification: Study on the costs, advantages and disadvantages of cocoa certification commissioned by The International Cocoa Organization (ICCO), October 2012, Amstelveen: KPMG Netherlands.

Ledger, S.N., Premier, R., Othman, N.B., Impithuksa, S., Layese, G., Hoon, K.G., Win, U.K. and Yusoff, J. (2006) 'Harmonising GAP Programs for Fresh Produce in ASEAN Region', Acta Horticulturae No. 712, pp. 523-25

McKenzie, D.J. (2005) 'Measuring inequality with asset indicators', Journal of Population Economics, 18, 229–60

Morris, M. and Morris, K. (2010) Regulation and Standards in the South African Horticulture Sector: Fresh Fruit and Vegetables. Paper prepared for World Bank Public Sector Governance Project: Relevance of "Globalized Regulation" for Developing Countries: Some African Experiences

Moser, C., and Felton, A. (2007) The Construction of an Asset Index Measuring Asset Accumulation in Ecuador. Chronic Poverty Research Centre Working Paper 87

Nelson, V. and Pound, B. (2009) The Last Ten Years: A Comprehensive Review of the Literature on the Impact of Fairtrade, London: NRI

OECD (2006) South-South Trade: Vital for Development, Policy Brief, Paris: OECD

OECD (2010) Perspectives on Global Development 2010: Shifting Wealth, Paris: OECD

Otsuki, T., Wilson, J.S. and Sewadeh, M. (2001) 'What price precaution? European harmonisation of aflatoxins regulations and African groundnut exports', European Review of Agricultural Economics 28(2) 263–83

Pão de Açúcar (2012) Programa qualidade desde a origem, available at http://www.qualidadedesdeaorigem.com.br/ (last accessed July 2013)

Pound, B and Phiri, A. (2009) Longitudinal Impact Assessment Study of Fairtrade-Certified Tea Producers and Workers In Malawi, London: NRI, University of Greenwich

Pound, B, Olok, F., Phiri, A. and Rangan, V (2012) Draft M&E Report of Fairtrade's Impact on Five Certified Organizations in Malawi Phase 2, London: NRI, December

Rainforest Alliance (2013) Pesticides, Waste & Human Health: Our Impacts available at http://www.rainforest-alliance.org.uk/work/impact/social/human-health (last accessed 21 November 2013)

Rainforest Alliance (RFA) and Committee on Sustainability Assessment (COSA) (2012) Evaluating the results of our work:the Rainforest Alliance certification on cocoa farms in Côte d'Ivoire. Research Report, New York: Rainforest Alliance, available at: http://www.rainforest-alliance.org/sites/default/files/publication/pdf/ra-certification-cocoa-cote-divoire-cosa.pdf

Reardon, T., Timmer, P., Barrett, C. and Berdegué, J. (2003) 'The Rise of supermarkets in Africa, Asia, and Latin America', American Journal of Agricultural Economics 85(5), 1140–6

Reinhardt, N. (2000) 'Back to basics in Malaysia and Thailand: The role of resource-based exports in their export-led growth', World Development, 28(1), 57–77

Sahn, D. and Stifel, D. (2003) 'Exploring alternative measures of welfare in the absence of expenditure data', Review of Income and Wealth, 49(4), 463–89

Seafish (2010) Review of Fish Sustainability Information Schemes, available at http://www.seafish.org/media/Publications/FSIG_Final_report_Jan2010.pdf (last accessed 21 November 2013)

Tschirley, D. (2010) Opportunities and Constraints to Increased Fresh Produce Trade in East and Southern Africa. Paper prepared for 4th Video Conference under AAACP-funded series of high value agriculture seminars, September

UN OHRLLS (2011) Harnessing the Positive Contribution of South-South Co-Operation for Least Developed Countries' Development. Background paper for Harnessing the Positive Contribution of South-South Co-operation for Least Developed Countries' Development, New Delhi, February, available at http://www.un.org/wcm/webdav/site/ldc/shared/documents/Background%20paper%20on%20South-South%20Cooperation%20for%20LDCs%20Development-FINAL.pdf (last accessed 21 November 2013)

UNCTAD (2007): Challenges and Opportunities Arising from Private Standards on Food Safety and Environment for Exporters of Fresh Fruit and Vegetables in Asia: Experiences of Malaysia, Thailand and Viet Nam, New York and Geneva: United Nations

UNCTAD (2011) The Least Developed Countries Report, 2011, Geneva: UNCTAD, available http://unctad.org/en/docs/ldc2011_en.pdf (last accessed 21 November 2013)

UNIDO (2010): Making Private Standards Work for You. A guide to private standards in the garments, footwear and furniture sectors, Vienna: UNIDO

UNIDO (2011) Meeting Standards, Winning Markets. Trade Standards Compliance 2010, Vienna: UNIDO

van der Valk, O. and van der Roest, J. (2008) National Benchmarking Against GLOBALGAP: Case Studies of Good Agricultural Practices in Kenya, Malaysia, Mexico and Chile, Report 2008–079, The Hague: Wageningen, LEI, available http://edepot.wur.nl/11453 (last accessed July 2012)

Vagneron, I. and Roquigny, S. (2010) What do We Really Know about the Impact of Fair Trade? A Synthesis, Paris: French Platform for Fair Trade (PFCE)

Villegas, M. (2006) 'Mexico Calidad Suprema', presententation made to conference, Costa Rica, available http://www.aserca.gob.mx/artman/uploads/04–06--mexico-calidad-suprema.pdf (last accessed July 2012)

Walmart (2012) Fornecedores, available at http://www.walmartbrasil.com.br/fornecedores/ (last accessed July 2013)

Wilkinson, J; Funcke, A.L; Mascarenhas, G; Pereira, P. R. F. (2012) Scoping Study: Horticulture in Latin America with specific focus on Brazil, Capturing the Gains Working Paper 2012, University of Manchester, UK.

Will, M. (2011) Standards in South-South Trade and Opportunities for Advancing the Sustainability Agenda. Background document for TSPN conference on South-South Trade and Opportunities for Advancing the Sustainability Agenda, Washington DC, November

Wilson, J. S. (2003) Standards and global trade: A voice for Africa. Washington, DC: World Bank

World Bank (2009) Transport Prices and Costs in Africa: A Review of the International Corridors. Washington DC: World Bank

WTO (2005) Exploring the Links Between Trade, Standards and the WTO. World Trade Report 2005. Geneva: WTO

WTO (2007) Private Standards and the SPS Agreement, Note by the Secretariat, G/SPS/GEN/746, Geneva: WTO, Committee on Sanitary and Phytosanitary Measures, available http://www.wto.org/english/docs_e/docs_e.htm (last accessed July 2012)

WWF (2011) 'Profitability and Sustainability in Palm Oil Production: Analysis of Incremental Financial Costs and Benefits of RSPO Compliance', available at http://www.worldwildlife.org/what/globalmarkets/intfinance/WWFBinaryitem27563.pdf (accessed 21 November 2013)

Annex A: Country abbreviations[111]

Name	Abbreviation
Afghanistan	AF
Albania	AL
Argentina	AR
Armenia	AM
Australia	AU
Austria	AT
Azerbaijan	AZ
Bahamas	BS
Bangladesh	BD
Barbados	BB
Belgium	BE
Belize	BZ
Bermuda	BM
Bolivia, Plurinational State of	BO
Bosnia and Herzegovina	BA
Brazil	BR
Brunei Darussalam	BN
Bulgaria	BG
British Virgin Islands	VG
Cambodia	KH
Cameroon	CM
Canada	CA
Chile	CL
China	CN
Colombia	CO
Costa Rica	CR
Côte d'Ivoire	CI
Croatia	HR
Cyprus	CY
Czech Republic	CZ
Denmark	DK
Dominican Republic	DO
Ecuador	EC
Egypt	EG
El Salvador	SV
Ethiopia	ET
Fiji	FJ
Finland	FI
France	FR
French Polynesia	PF
Georgia	GE
Germany	DE
Ghana	GH
Greece	GR
Greenland	GL
Guatemala	GT
Guyana	GY
Haiti	HT
Honduras	HN
Hong Kong, China	HK
Hungary	HU
Iceland	IS
India	IN
Indonesia	ID
Iran, Republic of	IR
Ireland	IE
Israel	IL
Italy	IT
Jamaica	JM
Japan	JP
Jordan	JO
Kenya	KE
Korea, Republic of	KR
Latvia	LV
Lebanon	LB
Lithuania	LT
Macao, China	MO
Macedonia, the former Yugoslav Republic of	MK
Madagascar	MG
Malawi	MW
Malaysia	MY
Maldives	MV
Malta	MT
Marshall Islands	MH
Mauritius	MU
Mexico	MX
Micronesia, Federated States of	FM
Moldova, Republic of	MD
Morocco	MA
Mozambique	MZ
Myanmar	MM
Namibia	NA
Netherlands	NL
New Zealand	NZ
Nicaragua	NI
Nigeria	NG
Norway	NO
Oman	OM
Pakistan	PK
Panama	PA
Papua New Guinea	PG
Paraguay	PY
Peru	PE
Philippines	PH
Poland	PL
Portugal	PT

111 Available from http://www.iso.org/iso/country_names_and_code_elements

Name	Abbreviation
Romania	RO
Russian Federation	RU
Rwanda	RW
Samoa	WS
Saudi Arabia	SA
Senegal	SN
Serbia	RS
Montenegro	ME
Seychelles	SC
Singapore	SG
Slovakia	SK
Slovenia	SI
South Africa	ZA
Spain	ES
Sri Lanka	LK
Saint Pierre and Miquelon	PM
Saint Vincent and the Grenadines	VC
Sudan	SD
Suriname	SR
Sweden	SE
Switzerland	CH
Syrian Arab Republic	SY
Taiwan, Province of China	TW
Tanzania, United Republic of	TZ
Turks and Caicos Islands	TC
Thailand	TH
Togo	TG
Tonga	TO
Trinidad and Tobago	TT
Tunisia	TN
Turkey	TR
Uganda	UG
Ukraine	UA
United Arab Emirates	AE
United Kingdom	GB
United States of America	US
Uruguay	UY
Uzbekistan	UZ
Venezuela, Bolivarian Republic of	VE
Viet Nam	VN
Yemen	YE
Zimbabwe	ZW

Annex B: Import rejection analysis

Annex Table B.1: *Relative rejection rate indicator for agri-food products by country, 2002-2010*

Exporting country	EU					United States					Japan					Australia				
	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds & Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products
Afghanistan	H	N	H	N	L	H		H	N	H	N			N		N		N	N	N
Albania	H	M	H	L	L	L		N	L		N	N	N	N		N	N	N	N	
Algeria	M	H	M	N	H	H		H			N	N	N			N				
American Samoa	N	N	N	N	N	N		N												
Andorra	N	N	N	N																
Angola	H	H	N	N	N	N			N		N	N								
Anguilla	N		N	N	N	N					N									
Antarctica	N	N	N																	
Antigua and Barbuda	N	N	N	N	N	N	N	N			N		N			N	N	N		
Argentina	M	L	L	N	M	L	L	L	M	L	L	N	N	N	M	L	L	L	N	L
Armenia	H	N	N	N	N	H	N	M	N	M	N	N	N			N		N		N
Aruba	H	N	N	N	N	H	H		N											
Australia	L	H	M	N	L	L	L	L	M	L	L	L	L	M	L	-	-	-	-	-
Austria	-	-	-	-	-	L	N	M	N	N	M	N	L	N	N	L	N	M	H	N
Azerbaijan	H	N	N	N	L	M	M	M	N	N	H		N			N	N	N		
Bahamas	N	N	N	N		L	L	N			N	N				N				
Bahrain	H	N	N	N	N	M	N				N	N				N	N	N		N
Bangladesh	H	H	H	H	H	M	M	H	H	H	H	N	N	H		H	H	H	H	H
Barbados	N	N	N	N		M	M	H	H		N					L		N		
Belarus	M	H	L	N	N	H	H	H	N	N	M		H			H		N		
Belgium	-	-	-	-	-	L	M	L	N	N	H	N	M	H	M	L	N	L	M	N
Belize	N	N	N	N		L	L	N	N		N	N	N			H	N	N	N	
Benin	H	H	N	N	M	N		N		N	N									
Bermuda	N	N	N	N		M	N				N					N		N		
Bhutan	N	N	N	N		N	N		N	N	N		N			N				
Bolivia	M	N	H	H	L	M	N	M	H	L	H	N	N	N	H	L		H	N	L
Bosnia and Herzegovina	M	N	M	M	N	H	N	M	N	N	N		N	N		H		M	N	
Botswana	H	N	N	N	N	N		N			N					N				
Brazil	L	H	L	L	M	L	M	L	L	L	L	N	L	H	H	L	M	L	M	L
Brunei Darussalam	N	N	N		N	M	L				N	N				N	N			
Bulgaria	-	-	-	-	-	H	N	M	M	L	N	N	N	N		M	N	N	N	H
Burkina Faso	M	N	N	N	M	H		N	N	N	N		N			N			N	
Burundi	N	N	N	N	N	N	N				N					N				
Cambodia	M	N	N	H	N	M	M	N	N	M	H	N		N		H	M	N	N	
Cameroon	L	N	L	L	N	M	N	H	H	N	H	N	N			N		N		
Canada	L	L	L	L	H	L	L	L	M	M	L	L	M	M	M	L	L	L	L	H

Exporting country	EU					United States					Japan					Australia				
	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds & Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products
Cape Verde	M	M	N	N	N	H	H				N	N								
Cayman Islands	N	N	N	N		N	N	N		N	N	N				N	N	N		
Central African Republic	N	N	N	N		N			N		N					N				
Chad	N	N	N			N					N					N				
Chile	L	M	L	L	L	L	L	L	L	N	L	L	L	N	N	L	L	L	L	M
Hong Kong	H	N	H	N	H	M	H	H	L	M	H	M	H	H	M	M	H	M	H	H
China	H	M	M	M	M	M	M	L	L	M	M	H	L	L	L	M	M	M	M	L
Colombia	L	L	L	N	N	L	L	L	L	H	M	N	M	N		L	N	N	N	N
Comoros	M		N	L	N	N			N							N			N	
Congo Brazzaville	M	H	H	N	N	N	N		N		N	N				N				
DRC	L	N	N	N	N	M	H				N	N				N		N		N
Cook Islands	N	N	N			H	H	N			N	N	N			H	H	N		
Costa Rica	L	H	L	N	N	L	L	L	L	N	M	N	L	N	N	L		L	N	
Croatia	M	H	M	N	M	M	M	M	N	N	N	N	N	N		M	N	M	N	
Cuba	L	M	N	N	N						M	N	N			M	L	N		
Cyprus	-	-	-	-	-	M	L	M	N	N	L	N	H			M	N	N		N
Czech Republic	-	-	-	-	-	M	N	H	L		L	N	N	N		M	N	N	N	
Denmark	-	-	-	-	-	L	L	M	H	N	L	H	H	N		L	L	L	N	H
Djibouti	N	N	N	N		H	H	N								N			N	
Dominica	N	N	N	N	N	H	H	H	N	N	H					N				
Dominican Republic	M	N	M	H	N	H	M	H	H	L	H		N			H		H		
Ecuador	L	M	L	N	M	L	L	L	M	N	H	N	N	N		N	N	N	N	
Egypt	H	M	M	M	H	H	H	M	M	H	N	N	N	N		H	N	H	L	H
El Salvador	L	L	N	N	N	M	M	L	H	H	L	N				H	N	N	N	
Equatorial Guinea	N	N	N	N		H					N	N				N		N		
Eritrea	H	N	N	H	N	N	N	N			N	N				N				
Estonia	-	-	-	-	-	M	N	N	N		N	N	N			M	N			
Ethiopia	L	N	N	H	H	L		M	H	M	H		N			M		H	H	
Fiji	L	H	H	N	N	M	L	M	L	N	M	M	N	N		M	H	M	H	M
Finland	-	-	-	-	-	L	N	N	N		M	H	H	N		L		N	N	
France	-	-	-	-	-	L	L	L	L	M	M	M	M	L	L	L	L	L	L	L
French Polynesia	M	M	N	N		L	M	L	N		N	N	N	N		H	N	M	N	
Gabon	M	M	N	N	N	N	N		N							N			N	
Gambia	H	H	N	N	M	H	H	N		N	N									
Georgia	M	N	H	N	L	M	N	H	M	N	N	N				H	N	M	N	
Germany	-	-	-	-	-	L	M	L	L	N	L	M	L	L	N	L	M	L	L	M
Ghana	M	M	M	H	H	H	H	M	H	M	H	N	H	N	N	H	H	H	N	
Greece	-	-	-	-	-	M	M	L	L	M	N	N	N	N	N	M	M	L	M	M

Exporting country	EU					United States					Japan					Australia				
	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds & Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products
Greenland	L	L	N	N		N	N	N			N	N								
Grenada	M	N	N	L		M	M	H	L		N			N		N			N	
Guam	N	N	N	N							N	N				N				
Guatemala	L	L	M	L	N	L	M	L	M	M	M	N	N	N	M	M		N	L	
Guinea	M	H	N	H	L	H	H	H	H	N	N	N				N				
Guinea-Bissau	N	N	N	N	N	N				N	N	N								
Guyana	L	N	N	N	N	M	M	H	H	N	N	N				N	N			
Haiti	M	N	N	N	N	H	H	L	H	H	H		N			N		N		
Honduras	L	L	L	N	N	M	L	L	M	M	H					L		N	N	
Hungary	-	-	-	-	-	M	N	L	L	N	L	N	N	N		M	N	N	L	
Iceland	L	L	N	N	N	L	L	N	N	N	N	N				M	M	N	N	
India	H	H	H	M	L	H	M	M	M	L	M	L	H	M	L	M	M	M	M	L
Indonesia	M	H	L	L	L	M	M	L	L	M	M	M	M	L	H	M	M	M	L	L
Iran	H	M	H	L	H	H	H	M	M	M	H	M	M	L	M	H	H	M	M	H
Iraq	H	N	H	N	N	N		N		N						N		N		N
Ireland	-	-	-	-	-	L	H	M	N	N	L	M	N	N		L	N	N	N	N
Israel	L	L	L	L	L	M	H	L	L	L	L	N	N	N	N	M	N	M	L	M
Italy	-	-	-	-	-	L	H	M	M	M	M	M	M	H	M	M	M	L	M	M
Ivory coast	L	M	L	N	L	L	H	M	H	N	N	N	N			L		N	N	
Jamaica	L	M	M	M	N	M	M	M	M	N	M		N	H		H		N	N	
Japan	M	M	H	M	L	M	M	M	H	H	-	-	-	-	-	H	H	H	H	M
Jordan	H	N	M	N	N	H	N	H	H	H	N					H	N	H	M	H
Kazakhstan	L	L	H	N	N	N	N				H	N		N		N	N			
Kenya	L	M	L	L	N	L	M	L	M	N	N	N	N	N	N	L	L	N	N	N
Kiribati	N	N	N	N	N	N	N				N	N				M	M			
Dem. Peo. Rep.of Korea	N	N	N	N							N	N	N	N		H	N	N	N	
Republic of Korea	H	M	H	N	N	H	H	M	L	M	M	H	L	L	L	H	H	H	H	N
Kosovo	H		N	M	N															
Kuwait	H	N	N	N	M	H		M	N		N	N				N			N	N
Kyrgyzstan	H		N	N	H	N	N	N	N	N	N					N	N			
Lao	N	N	N	N	N	N	N	N	N	N	H		H	N		N		N		
Latvia	-	-	-	-	-	H	H	H	N		N	N	N			H	M	N		
Lebanon	H	N	H	H	H	H	N	H	H	M	N		N			H		M	M	M
Lesotho	N	N	N	N	N	N														
Liberia	N	N	N		N	H	H		N	N	N	N				N	N			
Libya	N	N	N	N	N	N		N			N	N								
Liechtenstein	N	N	N	N	N															
Lithuania	-	-	-	-	-	H	H	H	N		N	N	N	N		H	H	N		N

Exporting country	EU					United States					Japan					Australia				
	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds & Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products
Luxembourg	-	-	-	-	-	N	N				H	N				H	N			
Macao	N	N	N	N	N	M	H	M	M	N	N	N				N	N	N	N	
Macedonia	M	N	M	M	N	H	N	H	M	H	N		N	N		H	N	M	H	N
Madagascar	L	L	M	L	N	L	M	H	N	N	M	H	N	N		N	N		N	
Malawi	M	N	N	M	M	L	N	L	N	N	N	N	N	N	N	M		M		
Malaysia	M	H	M	M	M	L	M	L	M	N	L	M	M	N	N	M	L	H	M	H
Maldives	M	L	N	N	N	M	M	N			L	M				N	N			
Mali	H	N	N	N	H	H	N	N			N					N	N	N	N	
Malta	-	-	-	-	-	H	N	N			L	L				N	N	N		N
Mauritania	M	L	N	N	N	H	H	N			N	N				N	N		N	
Mauritius	L	L	M	H	N	L	L	N	N	N	N	N				M	N	N	N	
Mexico	L	M	L	L	N	M	M	L	M	L	L	N	L	N	N	L	N	L	M	H
Micronesia	N	N	N			M	M	N			N	N	N	N						
Moldova	M	N	M	N	L	H		M	N	N	N					H		N		
Monaco																				
Mongolia	H	N	N	N	N	N		N			N		N	N		N	N			
Montenegro	N	N	N	N		N		N								N				
Montserrat	N	N	N	N		N		N								N		N		
Morocco	M	M	L	M	L	L	L	L	M		N	N	N	N		L	L	N	L	
Mozambique	M	L	N	N	L	L	L	M		N	L	N				N	N	N	N	
Myanmar	H	H	N	N	N	M	L	H			M	L	M	H	H	M	M	H	N	
Namibia	M	M	N	N	N	M	M		N		N	N		N		L	N		N	
Nepal	H	N	N	N	N	H		H	H		N		N	N		H		M	N	
Netherlands	-	-	-	-	-	L	L	L	L	L	L	N	M	N	N	L	N	L	M	H
New Caledonia	N	N	N	N		N	N	N	N		N	N	N			M	L	N		
New Zealand	L	M	N	N	N	L	L	L	M	N	L	L	L	N	N	L	L	L	L	M
Nicaragua	M	L	N	N	M	M	L	L	H	L	L	N				L				M
Niger	N	N	N	N	N	H	H	N			N	N				N		N	N	
Nigeria	H	M	H	M	H	H	H	H	M	H	M	N		N		H	H	H	H	N
Norway	L	L	N	M	L	L	L	H	N	N	L	L				L	L	N	N	
Oman	H	H	N	N	N	H	N	M		N	M	N	M			N	N			
Pakistan	H	M	H	H	M	H	M	H	H	H	M	H	H	M		M	H	H	H	H
Palau	N	N	N			H	H				N	N	N							
Palestinian Territory	N		N	N	N	N		N	N		N		N							
Panama	M	H	L	N	N	L	L	L	M	N	N	N	N			N	N	N		
Papua New Guinea	L	L	N	N	N	L	L	N	N	N	N	N	N	N		L	M	M	L	H
Paraguay	M	N	N	M	M	L	N	N	N		H	N	N	N	H	N			N	
Peru	L	L	L	M	N	L	M	L	L	L	M	N	M	M	H	L	N	L	L	L

Exporting country	EU					United States					Japan					Australia				
	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds & Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products
Philippines	M	M	M	N	L	M	M	L	H	L	M	H	L	N	N	H	H	L	H	L
Poland	-	-	-	-	-	M	H	M	H	H	M	N	L	N		M	M	L	M	
Portugal	-	-	-	-	-	M	M	M	N	N	L	N	N	N	N	H	M	L	H	N
Qatar	H	H	N	N	N	N										N				
Romania	-	-	-	-	-	H	N	H	H	M	H		H	N		M		N	N	
Russia	M	L	M	H	M	M	L	H	H	H	L	L	M	N	N	H	H	H	H	N
Rwanda	L		N	N	N	L					N					N				
Samoa	N		N	N		M	M	M	N		N	N	N			M	N	N		N
San Marino	H	N	N	N	H	N														
São Tomé and Príncipe	N	N	N	N	N	H	N				N	N								
Saudi Arabia	H	N	M	H	H	H	N	H	N	H	N	N	N			H	L	H	H	M
Senegal	M	M	M	N	H	H	H	H	H	H	N	N				N	N		N	
Serbia	L	H	L	L	N	M	N	L	H	N	N	N	N	N		M		M	N	
Serbia and Montenegro	L	N	L	L	N	H	N	H	M	N						N		N	N	
Seychelles	L	L	N	N		H	H				N	N				N			N	
Sierra Leone	M	N	N	H	H	H	H	M	N	N	N	N				H		H	H	N
Singapore	H	H	H	M	M	M	H	M	L	N	L	N	H	N	H	L	M	H	N	N
Slovakia	-	-	-	-	-	M	N	H	N		N		N			M		M	N	
Slovenia	-	-	-	-	-	M	H	H	N	N	N		N			M	N	N	N	
Solomon Islands	N	N	N		N	N	N		N		N	N				M	M	N		
Somalia	N	N	N	N		H	N	H	N		N	N				H	N		N	
South Africa	L	L	L	L	M	M	L	L	L	L	M	N	L	M	L	M	L	L	M	L
Spain	-	-	-	-	-	L	M	L	L	L	M	N	H	L	M	L	H	L	M	L
Sri Lanka	H	H	H	M	L	H	H	H	M	M	H	M	H	H	N	M	H	H	M	M
St Helena	N	N	N			N	N				N	N								
St Kitts and Nevis	N	N	N	N	N	H	N	N			N				N					
St Lucia	N	N	N	N	N	H	N	H	N		N					N				
St Vincent and the Grenadines	N	N	N	N	N	H	H	M	N		N	N				N				
Sudan	M	N	N	N	H	L			N		H			N		H	N	N	H	
Suriname	M	M	H	N	N	M	M	N	N		N	N				N	N	N	N	
Swaziland	L	N	L	N		L		N	N	N	N		N			N		N		
Sweden	-	-	-	-	-	L	H	L	L	N	H	N	M	N		M	H	M	N	
Switzerland	L	N	L	N	N	L	N	L	N	M	L	N	M	N	N	L	N	L	N	N
Syria	H	N	H	M	H	H	N	H	M	H	N			N		H		H	M	H
Tajikistan	H		N	N	M	N		N			N									
Tanzania	L	L	N	N	N	L	L	L	N	L	M	N	N	N	H	L	N		N	N
Thailand	H	M	H	H	M	M	L	L	M	L	M	H	M	L	L	L	L	M	L	M
Timor-Leste	N	N	N	N		N					N	N				M	N		N	

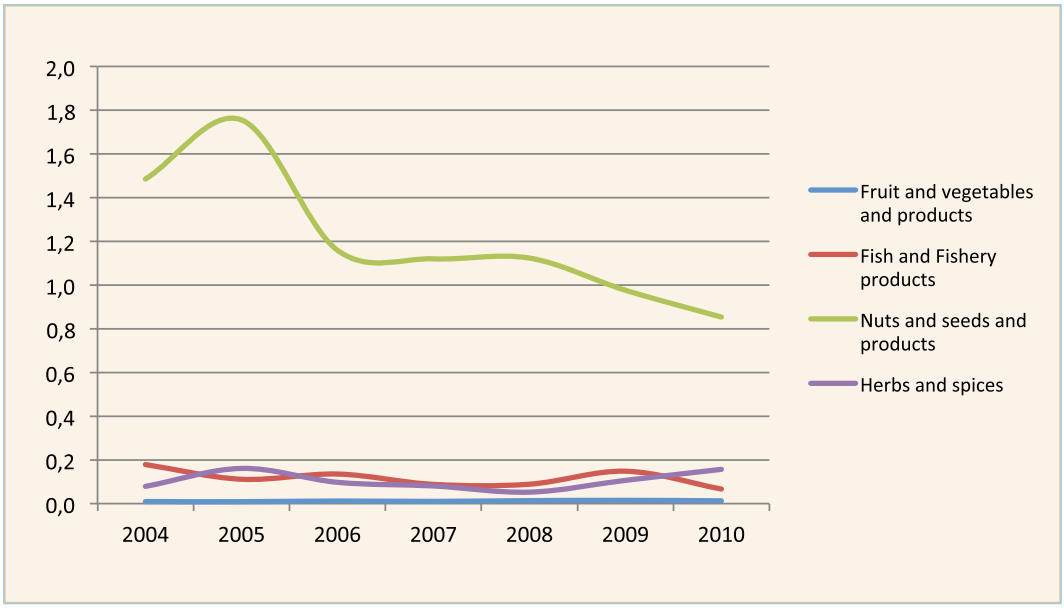
Exporting country	EU					United States					Japan					Australia				
	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds & Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products	All	Fish & Fishery Products	Fruit & Vegetables & Products	Herbs & Spices	Nuts & Seeds &Products
Togo	L	L	N	N	M	L	H	M	N		N	N				N		N		
Tokelau	N	N	N	N	N	H	N	M	N	N	N									
Tonga	H	N	N	N	N	L	L	N	N		N	N	N			H	H	H	H	N
Trinidad and Tobago	N	N	N	N	N	M	L	M	H	N	N	N				H		N		
Tunisia	M	H	M	L	N	M	M	M	N	N	M	N	H	N	N	N	N	N	N	N
Turkey	H	M	H	M	L	M	M	L	L	L	M	L	L	N	L	M	M	L	L	L
Turkmenistan	N	N	N	N	N	N		N	N		N			N						
Turks and Caicos	N	N	N	N	N	L	L		N							N				
Tuvalu	N	N	N								N	N				N	N			
Uganda	L	L	M	M	H	L	L	H	L		M	H	N	N		L	L		N	
Ukraine	M	N	M	H	M	H	H	H	N	H	N	N	N	N		H	N	H	N	N
United Arab Emirates	L	H	N	H	M	M	L	M	L	N	H	H	H			M	H	H	H	M
United Kingdom	-	-	-	-	-	M	M	H	H	H	L	N	L	N	N	L	L	M	L	M
United States of America	M	L	L	L	L	-	-	-	-	-	L	L	L	M	L	L	L	L	L	L
Uruguay	M	M	L	N	N	L	L	H	N	N	N	N	N			L	N	N	N	
Uzbekistan	H	N	H	H	M	M	N	M	N	N	H		N	N	H	N		N	N	
Vanuatu	N	N	N	N		N	N	N	N		N	N		N		L	H	N	N	
Venezuela	L	L	N	H	N	M	M	M	N	N	H	N		N		N		N	N	N
Viet Nam	H	H	H	L	L	M	M	M	L	L	H	H	H	M	M	M	L	M	L	L
Yemen	H	M	N	N	N	M	H		N		H	N				H	N	H		
Zambia	L	N	N	N	H	N	N	N	N	N	N	N		N		N		N	N	
Zimbabwe	L	N	M	N	H	L		N	N		N					L		N	N	N

Note: Japan: 2006-2010; Australia: 2003-2010; An 'N' indicates that the country had no rejections.

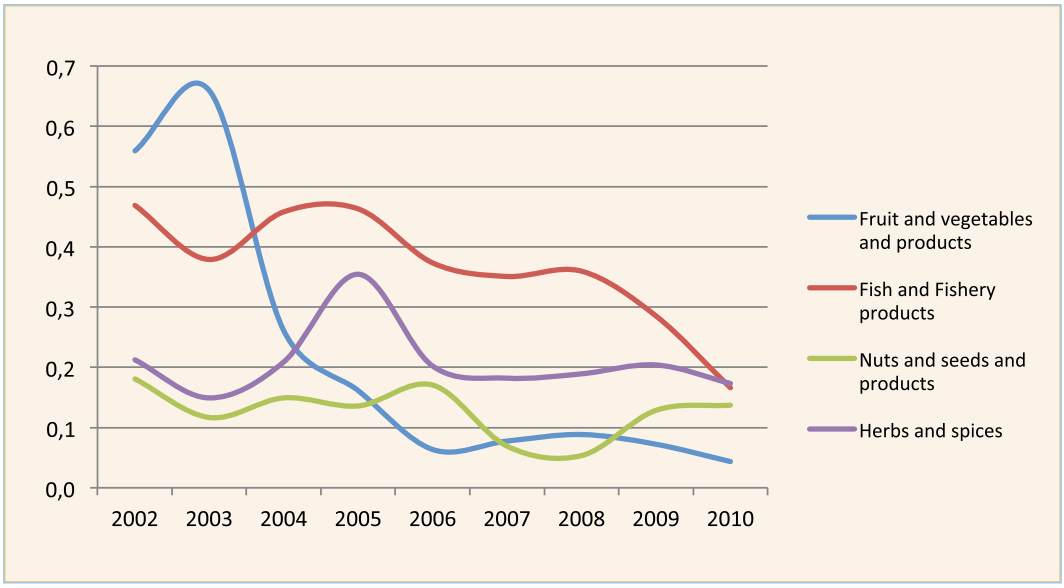
Annex Table B.2: *Spurious units and missing data for volume of rejected consignments in import rejection databases*

Commodity	Missing Data (%)	Spurious Units (%)	Total (%)
European Union			
Fish and fishery products	15.4	0.7	16.1
Fruit and vegetables and products	25.3	1.6	26.9
Herbs and spices	30.7	0.8	31.6
Nuts and seeds and products	5.0	0.3	5.3
United States			
Fish and fishery products	6.6	3.4	10.0
Fruit and vegetables and products	5.7	11.9	17.6
Herbs and spices	11.8	7.1	18.9
Nuts and seeds and products	8.5	9.8	18.3
Japan			
Fish and fishery products	10.4	0.0	10.4
Fruit and vegetables and products	26.4	0.0	26.4
Herbs and spices	17.1	0.0	17.1
Nuts and seeds and products	35.1	0.0	35.1
Australia			
Fish and fishery products	0.0	0.1	0.1
Fruit and vegetables and products	0.0	7.2	7.2
Herbs and spices	0.0	0.1	0.1
Nuts and seeds and products	0.0	0.0	0.0

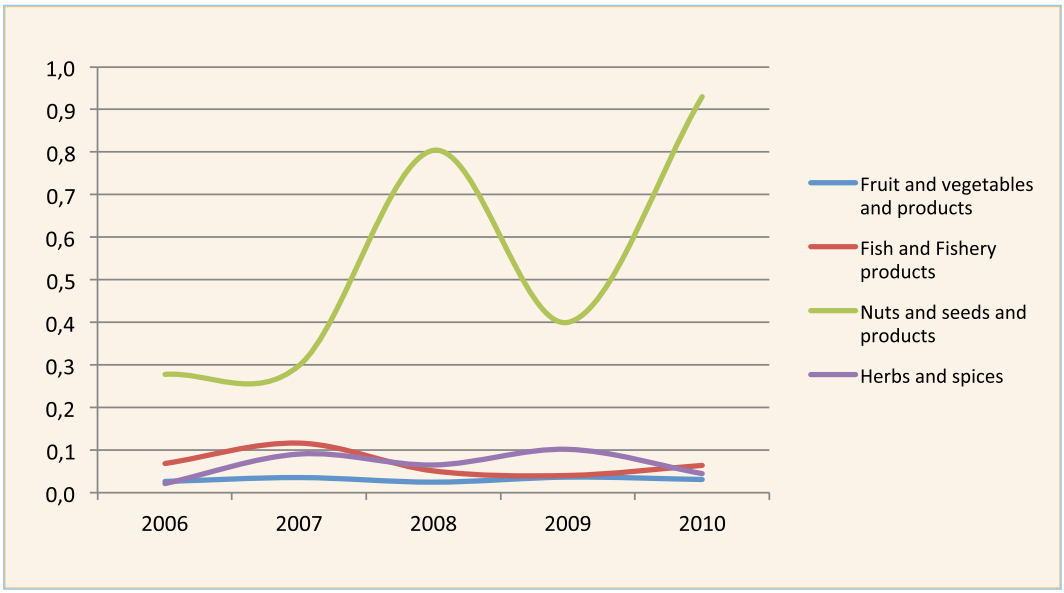
Annex Figure B.1: *Trend in value of EU rejections of agrifood product imports, 2004–2010 (% value of imports)*



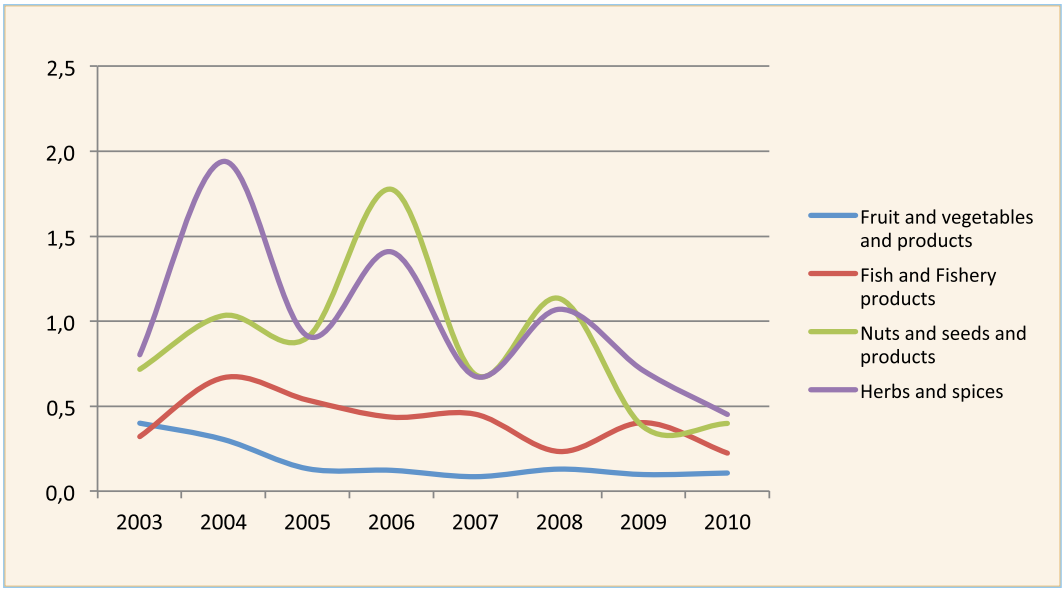
Annex Figure B.2: *Trend in value of US rejections of agrifood product imports, 2002–2010 (% value of imports)*



Annex Figure B.3: *Trend in value of Japanese rejections of agrifood products, 2006–2010 (% value of imports)*



Annex Figure B.4: *Trend in value of Australian rejections of agrifood product imports, 2003–2010 (% value of imports)*

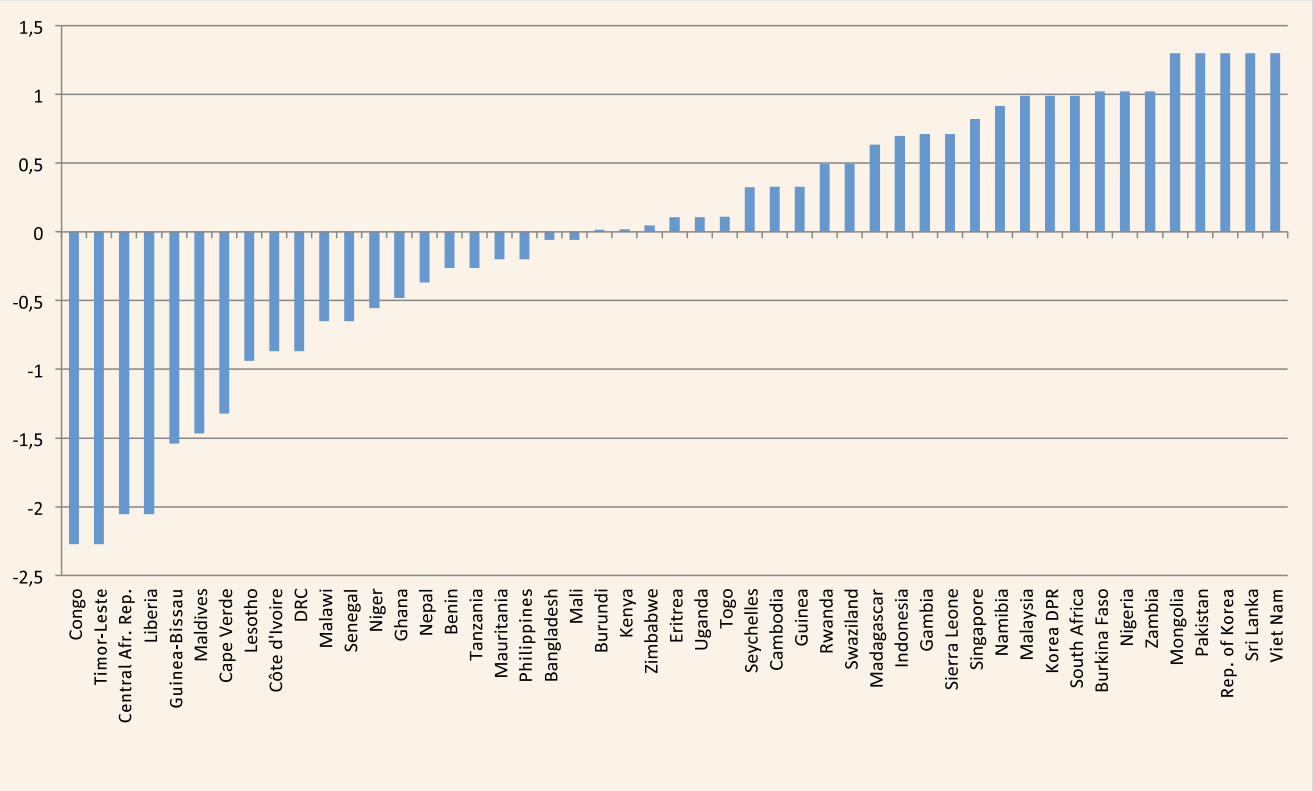


Annex C: Summary statistics and first principal component scores for the 10 TSCCI areas

Annex Table C.1: Summary statistics and first principal component scores for quality policy/legislative environment

Asset	Mean	Standard deviation	Scoring factor for first principal component
National Quality Policy (NQP)			
NQP in place	0.47	0.504	0.768
NQP deals with technical regulation regime	0.43	0.500	0.739
Legislative Framework			
Legislation in place for: standards	0.84	0.373	0.777
Legislation in place for: Legal metrology	0.90	0.306	0.690
Legislation in place for: Scientific metrology	0.57	0.500	0.595
Legislation in place for: Accreditation	0.43	0.500	0.431
Legislation in place for: Technical regulation framework	0.41	0.497	0.475
Legislation in place for: Food safety	0.67	0.474	0.318
Eigenvalue of first component		3.08	
Percentage variance of first component		42.2%	

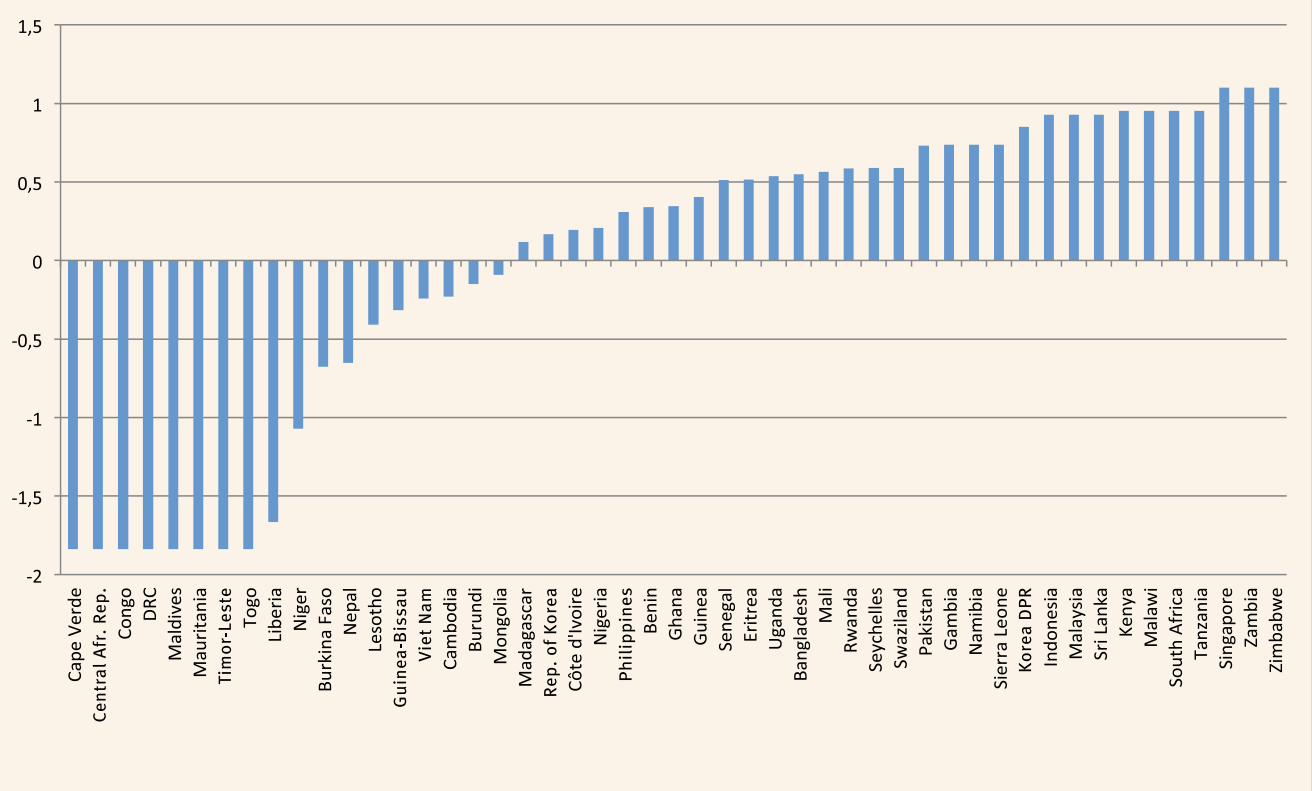
Annex figure C.1: *Capacity index—quality policy/legislative environment*



Annex Table C.2. Summary statistics and first principal component scores for standardisation

Asset	Mean	Standard deviation	Scoring factor for first principal component
National Standards Board (NSB)			
NSB established	0.82	0.391	0.871
Representatives of private sector on NSB governing body	0.67	0.474	0.714
Representatives of consumers on NSB governing body	0.43	0.500	0.441
Representatives of academia on NSB governing body	0.53	0.504	0.680
National Standards Board Independence			
NSB has authority to adopt and revoke national standards	0.71	0.456	0.841
NSB has authority to select its workforce and determine the position and staffing of its workforce	0.65	0.481	0.813
NSB has authority to determine its own budget	0.53	0.504	0.744
NSB has authority to determine the price of standards publications	0.73	0.446	0.841
NSB has authority to decide on new services or new structures	0.65	0.481	0.784
National Standardisation Activity			
Number of national standards	0.45	0.503	0.517
Number of technical committees established	0.39	0.492	0.575
Industry participation in technical committees	0.57	0.500	0.520
Eigenvalue of first component		6.04	
Percentage variance of first component		50.3%	

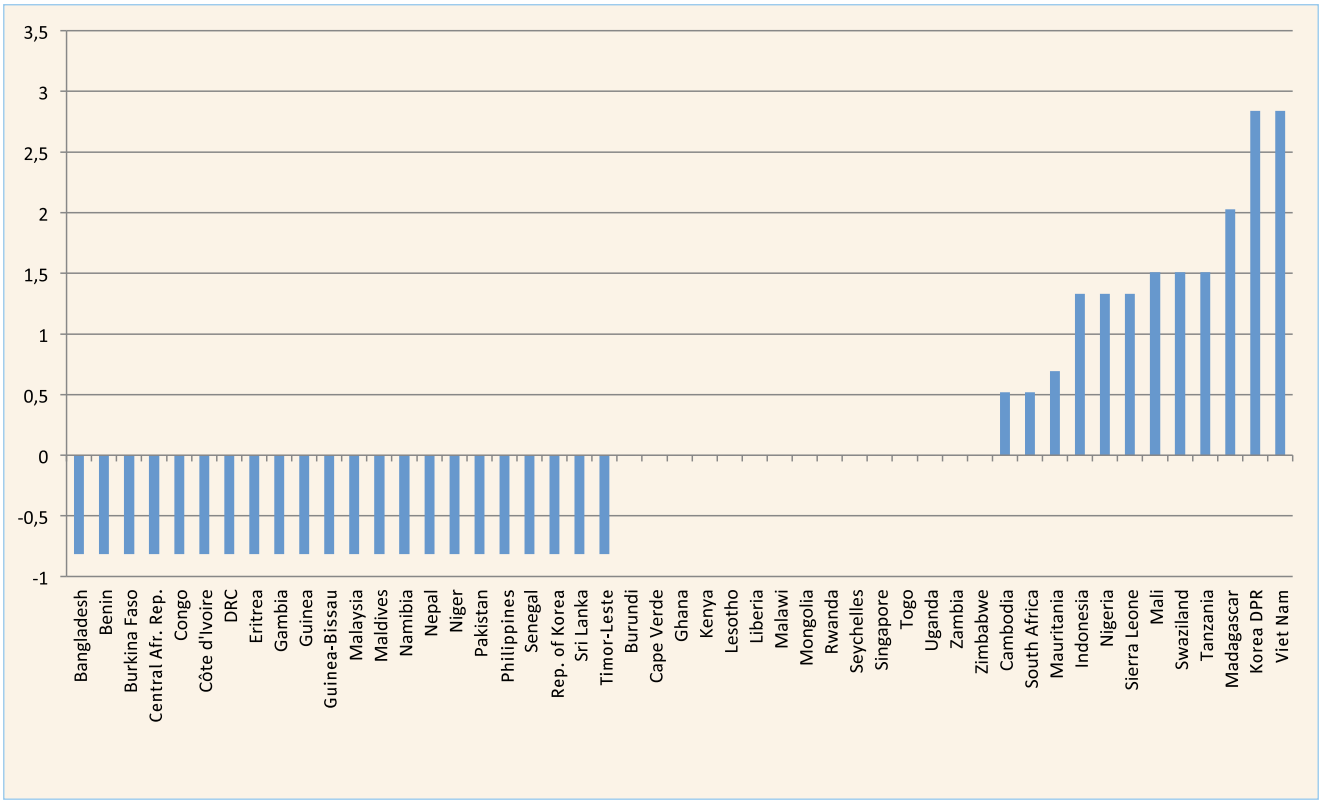
Annex figure C.2: Capacity Index—standardization



Annex Table C.3. Summary statistics and first principal component scores for technical regulations

Asset	Mean	Standard deviation	Scoring factor for first principal component
Technical Regulation Office			
National technical regulatory framework implemented	0.16	0.373	0.711
Central office responsible for technical regulatory framework established	0.14	0.354	0.761
Regulatory Reform Programme			
Explicit regulatory reform programme underway	0.47	0.504	0.586
Eigenvalue of first component		1.73	
Percentage variance of first component		56.9%	

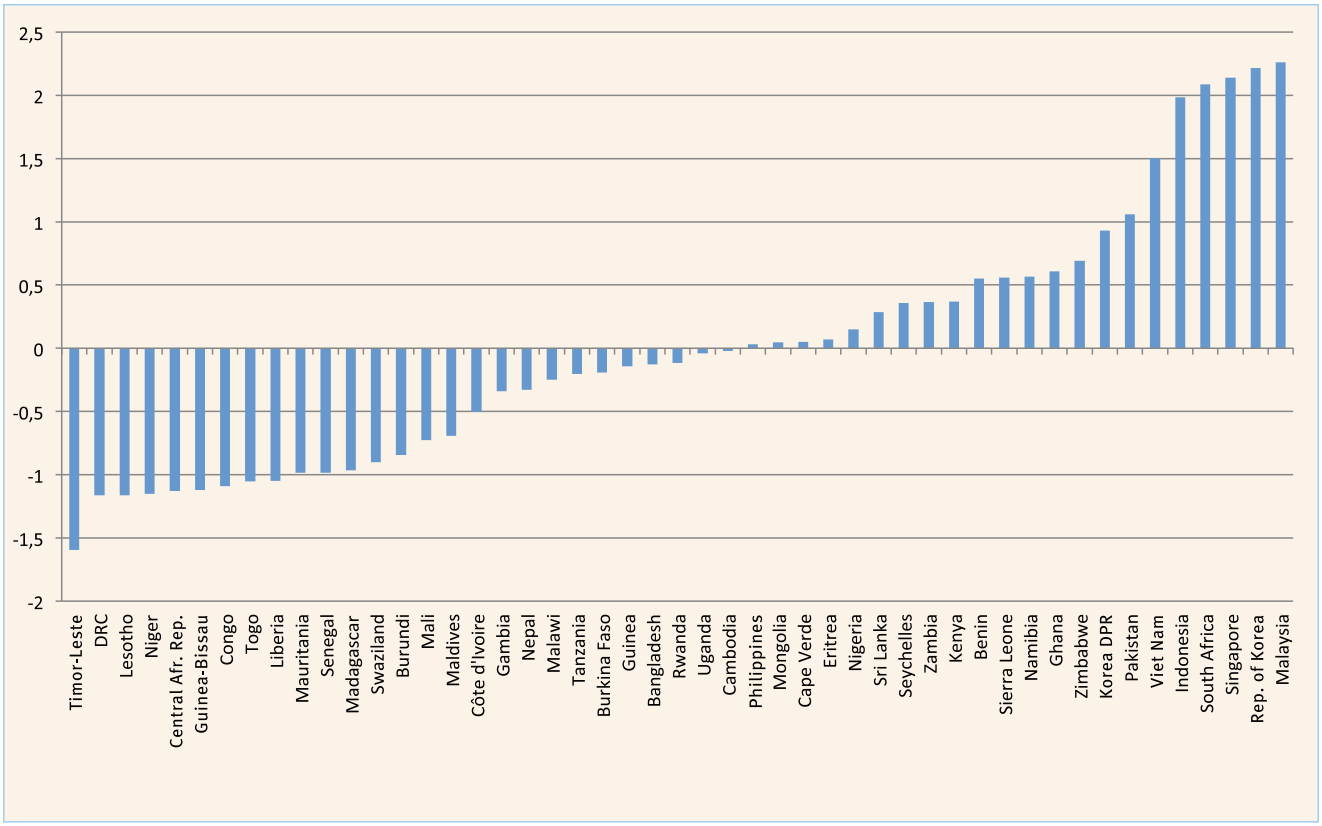
Annex figure C.3: Capacity Index—technical regulations



Annex Table C.4. Summary statistics and first principal component scores for metrology

Asset	Mean	Standard deviation	Scoring factor for first principal component
National Metrology Institute (NMI)			
NMI established	0.57	0.500	0.628
Signatory of Metre Convention	0.35	0.481	0.707
NMI a member of BIPM	0.39	0.492	0.726
National Metrology Institute Independence			
NMI has authority to define which measurement standards are national standards	0.57	0.500	0.719
NMI has authority to officially designate other institutions as custodians of national measurement standards	0.33	0.474	0.762
NMI has authority to select its own workforce and determine the position and staffing of its workforce	0.47	0.504	0.718
NMI has authority to determine its own budget	0.35	0.481	0.457
NMI has authority to decide on new services or new structures	0.49	0.505	0.589
Technical Capability of National Metrology Institute			
National measurement standards established	0.69	0.466	0.616
Calibration and measurement capabilities (CMCs) entered in CIPM MRA database	0.12	0.331	0.767
Legal Metrology Department (LMD)			
LMD established	0.90	0.306	0.436
Measuring instruments subject to legal control - trade	0.98	0.143	0.433
Measuring instruments subject to legal control – law enforcement (eg. scales, fuel dispensers, etc.)	0.65	0.481	0.423
Measuring instruments subject to legal control – health and safety (eg. thermometers, blood pressure meters, etc.)	0.57	0.500	0.364
Measuring instruments subject to legal control – environmental control	0.51	0.505	0.377
Control of Pre-Packaged Goods			
Legal controls for pre-packaged goods	0.76	0.434	0.453
Calibration Services			
Calibration services for basic parameters allow for measurement traceability	0.71	0.456	0.501
Calibration services for basic parameters accredited	0.22	0.422	0.635
Calibration services for intermediate parameters allow for measurement traceability	0.33	0.474	0.684
Calibration services for intermediate parameters accredited	0.14	0.354	0.680
Calibration services for sophisticated parameters allow for measurement traceability	0.16	0.373	0.752
Calibration services for sophisticated parameters accredited	0.10	0.306	0.728
Eigenvalue of first component		7.63	
Percentage variance of first component		44.7%	

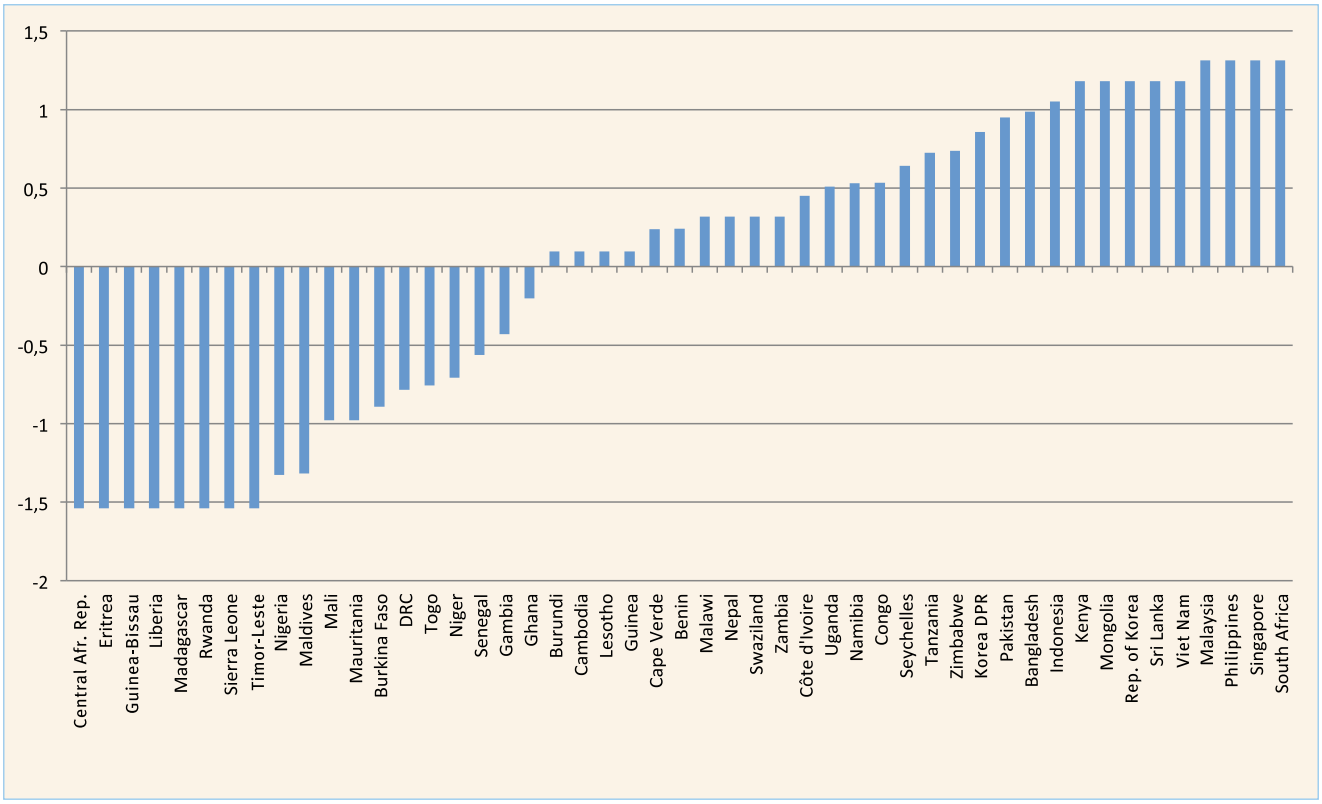
***Annex figure C.4:** Capacity Index—metrology*



Annex Table C.5. Summary statistics and first principal component scores for accreditation

Asset	Mean	Standard deviation	Scoring factor for first principal component
National Accreditation Board (NAB)			
NAB or RAB operational in country	0.80	0.407	0.765
NAB or RAB member of multilateral mutual recognition arrangements (MRAs)	0.76	0.434	0.748
National Accreditation Board Independence			
NAB has authority to accredit entities that demonstrably meet criteria	0.63	0.487	0.850
NAB has authority to select its workforce and determine the position and staffing of its workforce	0.61	0.492	0.877
NAB has authority to determine its own budget	0.57	0.500	0.846
NAB has authority to decide on new services or new structures	0.57	0.500	0.837
Accreditation Performance			
Accredited calibration laboratories	0.41	00.497	0.616
Accredited test laboratories	0.61	0.492	0.703
Accredited inspection bodies	0.37	0.487	0.665
Accredited certification bodies - systems	0.35	0.481	0.700
credited certification bodies - products	0.27	0.446	0.660
credited certification bodies – private standards	0.22	0.422	0.458
Eigenvalue of first component		6.42	
Percentage variance of first component		53.5%	

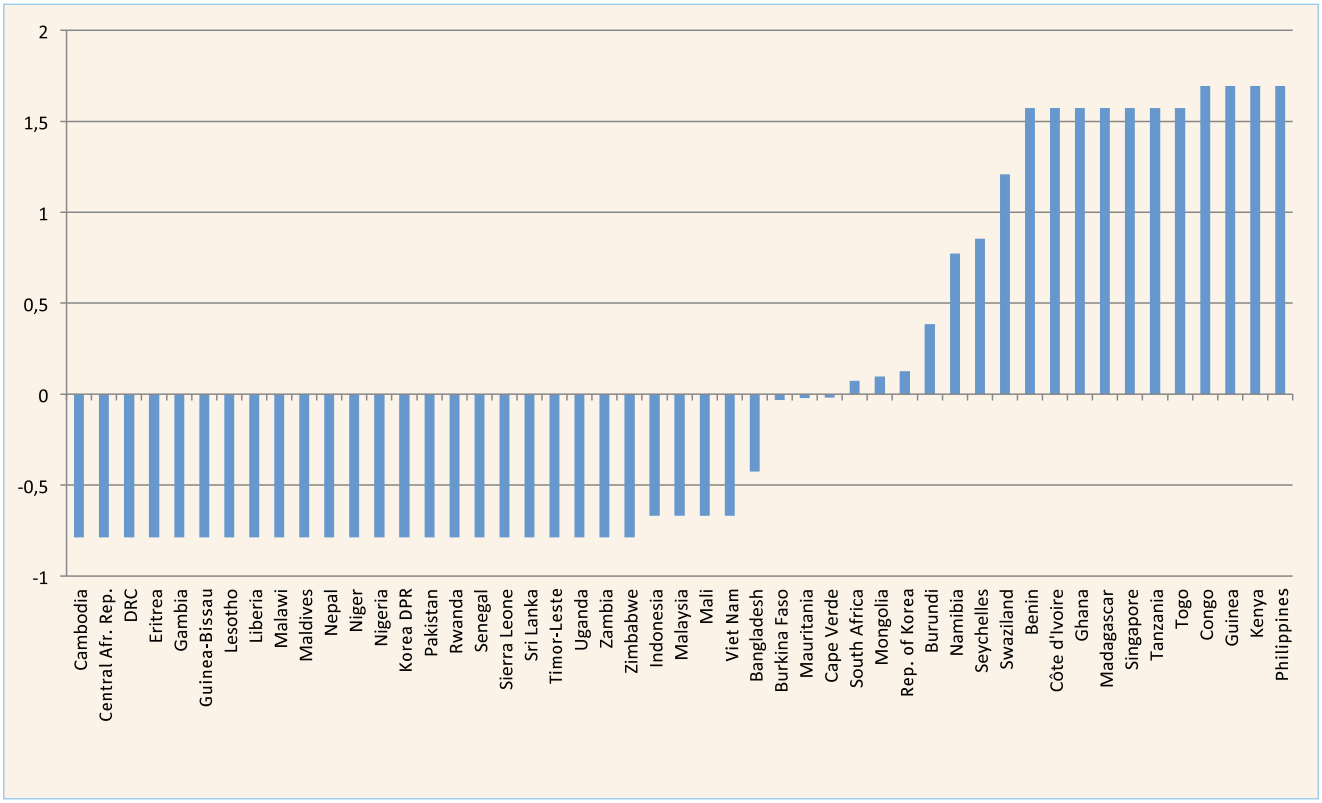
Annex figure C.5: Capacity Index—accreditation



Annex Table C.6. Summary statistics and first principal component scores for inspection

Asset	Mean	Standard deviation	Scoring factor for first principal component
NIB accredited to ISO/IEC 17020	0.24	0.434	0.452
NIB recognised/designated in foreign countries for inspection services – Priority export sector 1	0.39	0.492	0.817
NIB recognised/designated in foreign countries for inspection services – Priority export sector 2	0.35	0.481	0.894
NIB recognised/designated in foreign countries for inspection services – Priority export sector 3	0.31	0.466	0.908
NIB recognised/designated in foreign countries for inspection services – Priority import sector 1	0.35	0.481	0.902
NIB recognised/designated in foreign countries for inspection services – Priority import sector 2	0.31	0.466	0.907
NIB recognised/designated in foreign countries for inspection services – Priority import sector 3	0.24	0.434	0.911
Eigenvalue of first component		4.81	
Percentage variance of first component		68.8%	

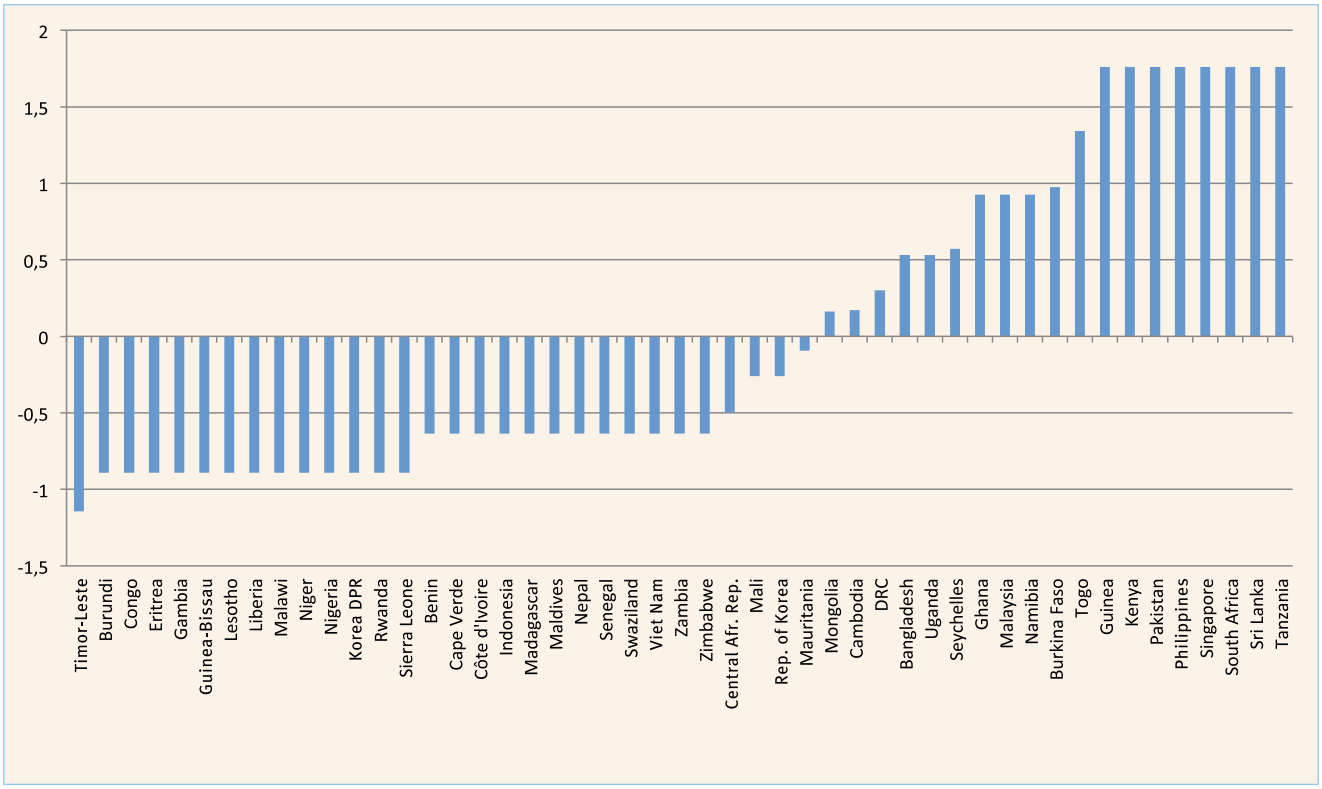
Annex figure C.6: Capacity Index—inspection



Annex Table C.7. Summary statistics and first principal component scores for testing

Asset	Mean	Standard deviation	Scoring factor for first principal component
Laboratories established and operational	0.98	0.143	0.467
Laboratories accredited to ISI/IEC 17025	0.65	0.481	0.664
Laboratories recognised/designated in foreign countries for testing services – Priority export sector 1	0.37	0.487	0.799
Laboratories recognised/designated in foreign countries for testing services – Priority export sector 2	0.37	0.487	0.876
Laboratories recognised/designated in foreign countries for testing services – Priority export sector 3	0.22	0.422	0.893
Laboratories recognised/designated in foreign countries for testing services – Priority import sector 1	0.33	0.474	0.786
Laboratories recognised/designated in foreign countries for testing services – Priority import sector 2	0.35	0.481	0.825
Laboratories recognised/designated in foreign countries for testing services – Priority import sector 3	0.20	0.407	0.860
Eigenvalue of first component		4.56	
Percentage variance of first component		65.2	

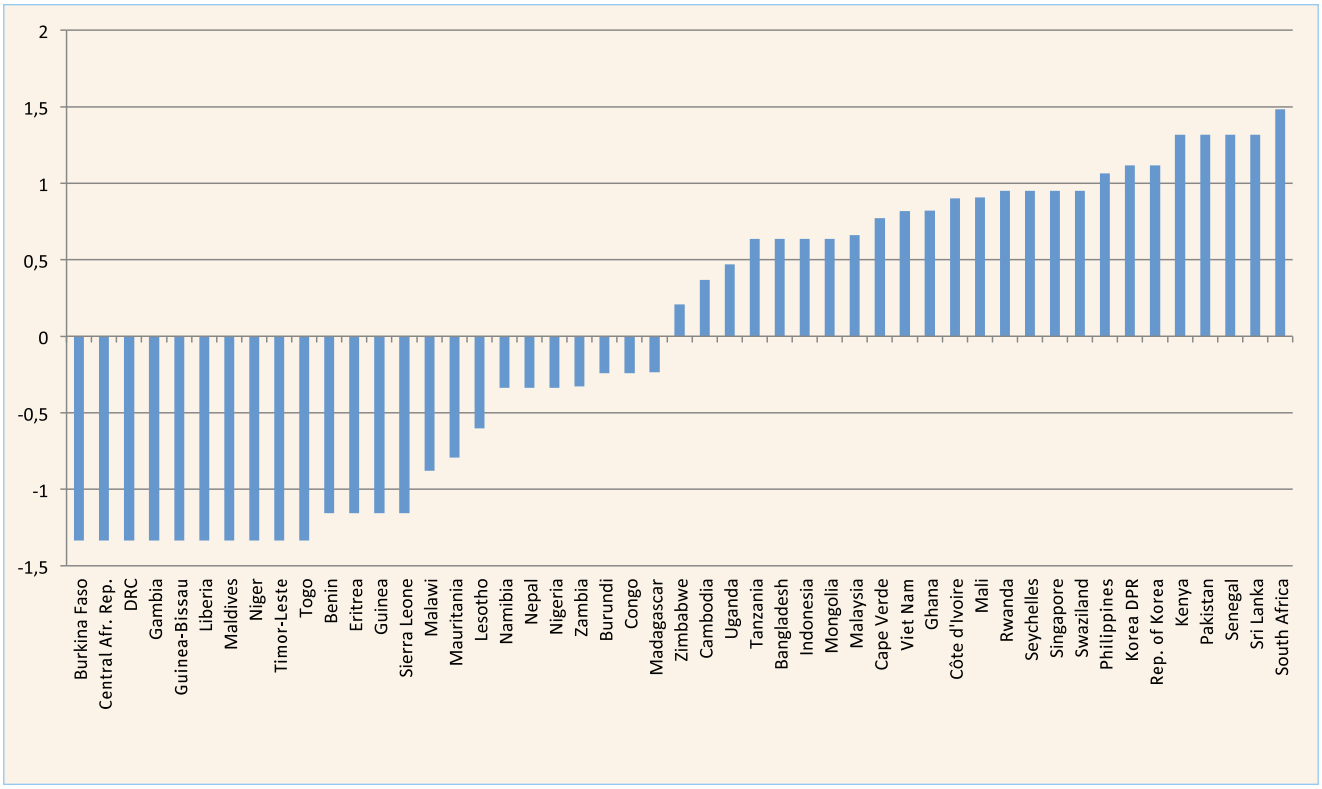
Annex figure C.7: Capacity Index—testing



Annex Table C.8. Summary statistics and first principal component scores for certification

Asset	Mean	Standard deviation	Scoring factor for first principal component
System Certification Bodies			
System certification bodies active – ISO 9001	0.98	0.143	0.821
System certification bodies active – ISO 14001	0.65	0.481	0.861
System certification bodies active – ISO 22000/HACCP	0.37	0.487	0.862
System certification bodies active – BRC or related	0.37	0.487	0.775
System certification bodies active – GlobalGAP	0.22	0.422	0.535
System certification bodies accredited – ISO 9001	0.33	0.474	0.893
System certification bodies accredited – ISO 14001	0.35	0.481	0.873
System certification bodies accredited – ISO 22000/HACCP	0.20	0.407	0.866
System certification bodies accredited – BRC or related	0.71	0.456	0.650
System certification bodies accredited – GlobalGAP	0.59	0.497	0.474
Product Certification			
National product certification mark scheme established/operational	0.65	0.481	0.559
National product certification mark scheme accredited	0.18	0.391	0.519
Eigenvalue of first component		6.49	
Percentage variance of first component		54.1%	

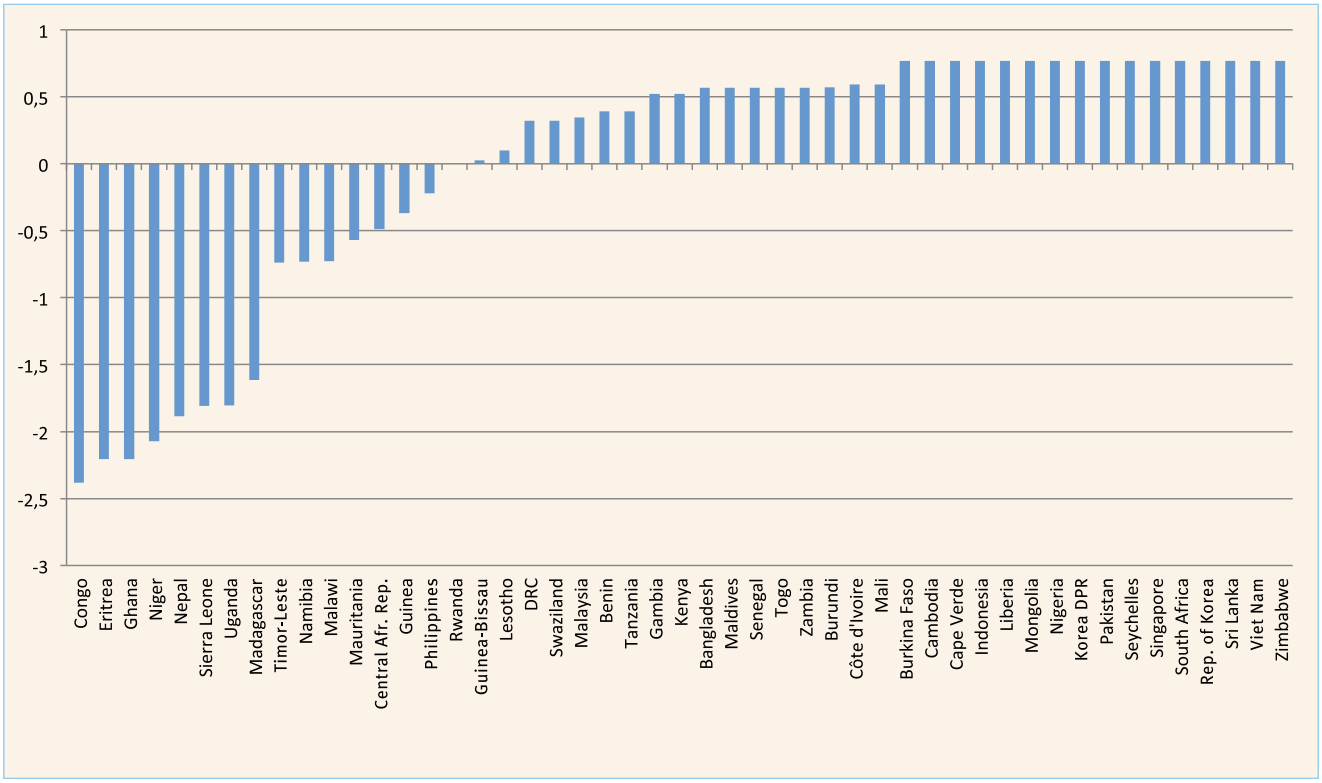
Annex figure C.8: Capacity Index—certification



Annex Table C.9. *Summary statistics and first principal component scores for food safety*

Asset	Mean	Standard deviation	Scoring factor for first principal component
National policy for food safety	0.59	0.497	0.455
Food safety legislation/law in place	0.78	0.422	0.620
Food safety legislation/law harmonised with international standards, guidelines and recommendations	0.65	0.481	0.548
National entity established to manage food safety – Fresh produce	0.80	0.407	0.892
National entity established to manage food safety – Food processing	0.82	0.391	0.877
National entity established to manage food safety – Market place surveillance	0.82	0.391	0.761
National entity established to manage food safety – Storage and transport	0.76	0.434	0.842
National entity established to manage food safety – Plants and seeds	0.80	0.407	0.748
Laboratories available for food safety testing	0.96	0.200	0.293
Capacity for food safety-related inspection	0.88	0.331	0.298
Capacity for food safety-related certification	0.76	0.434	0.350
Eigenvalue of first component		4.60	
Percentage variance of first component		47.5%	

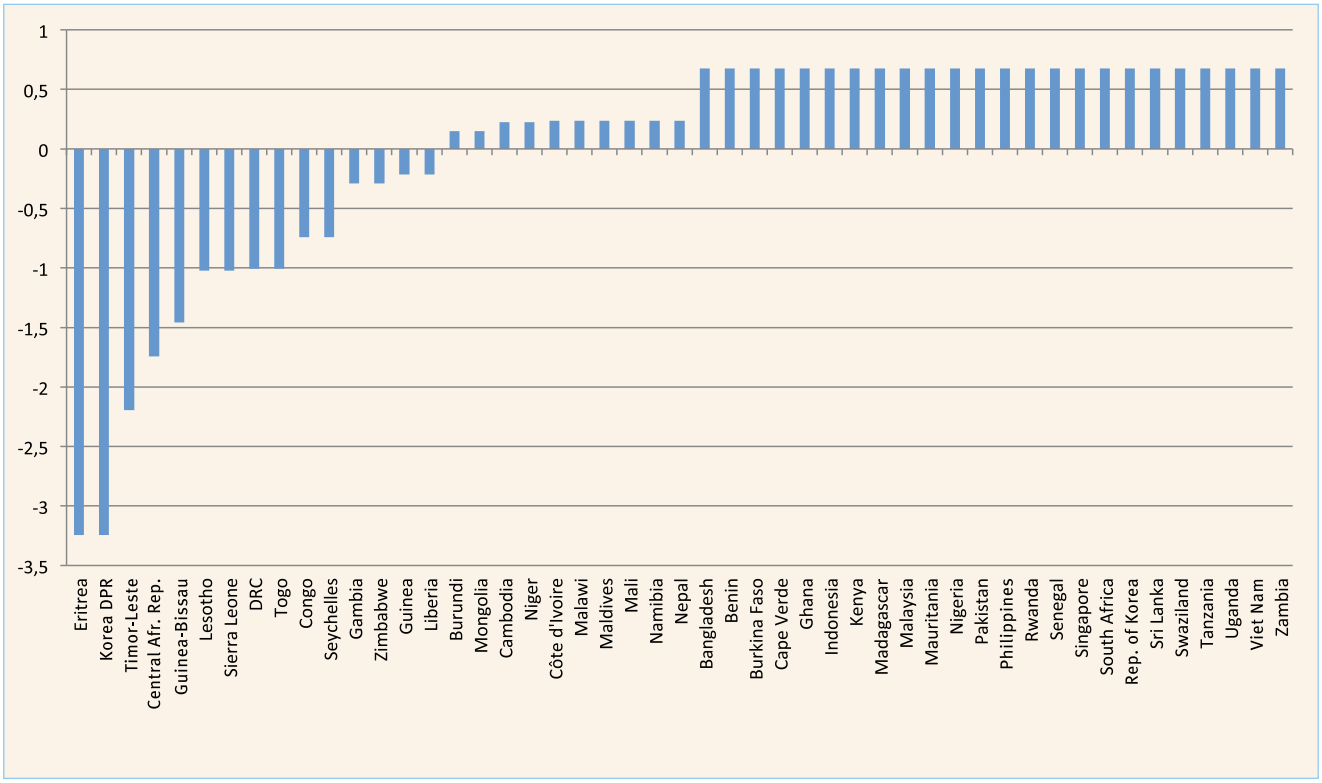
Annex figure C.9: *Capacity Index—food safety*



Annex Table C.10. Summary statistics and first principal component scores for WTO related institutions respective to technical regulations and standards

Asset	Mean	Standard deviation	Scoring factor for first principal component
TBT National Notification Authority (NNA)/Enquiry Point (EP)			
NNA appointed	0.88	0.331	0.784
Notifications made of new technical regulations	0.57	0.500	0.709
National EP appointed	0.86	0.354	0.819
National EP notified to WTP	0.69	0.466	0.792
SPS National Notification Authority (NNA)/Enquiry Point (EP)			
NNA appointed	0.80	0.407	0.593
EP appointed	0.98	0.200	0.676
Eigenvalue of first component	3.22		
Percentage variance of first component	53.7%		

Annex figure C.10: Capacity Index—WTO-related institutions respective to technical regulations and standards



Annex D: Value of Argentina's fruit and vegetables exports

Annex Table D.1: *Value of fruit and vegetables exported from Argentina to Brazil and the EU (US$ 1,000)*

to Brazil			
Product	**2007**	**2011**	**Growth %**
Garlic	72,099.07	138,371.16	91.92
Beans	42,802.48	93,088.42	117.48
Onions	34,622.82	60,881.33	75.84
Peas	6,828.92	12,668.97	85.52
Other products	5,001.42	12,942.64	158.78
Total HS 07	161,354.72	317,952.51	97.05
Pears	73,312.07	136,938.46	86.79
Apples	35,155.54	63,877.03	81.70
Raisin	19,064.95	43,502.84	128.18
Grapes	7,312.17	19,906.63	172.24
Other products	35,589.70	46,723.10	31.28
Total HS08	170,434.42	310,948.06	82.44
Total HS 07 + HS 08	**331,789.14**	**628,900.56**	**89.55**

to the European Union (EU-27)			
Product	**2007**	**2011**	**Growth %**
Beans	83,000.31	92,291.85	11.19
Garlic	22,098.46	47,642.89	115.59
Small red (Adzuki) beans	384.00	20,989.87	5,366.08
Onion	18,019.75	11,423.40	-36.61
Other products	8,872.01	20,715.90	133.50
Total HS 07	132,374.52	193,063.91	45.85
Pears	91,315.56	123,421.73	35.16
Lemons	107,015.00	117,464.29	9.76
Apples	65,367.84	44,987.56	-31.18
Orange	42,499.71	42,948.62	1.06
Grapes	37,223.54	37,397.56	0.47
Berries	19,330.07	35,540.53	83.86
Tangerine	21,819.95	28,223.31	29.35
Other Fruits	48,523.05	42,575.85	-12.26
Total HS08	433,094.72	472,559.45	9.11
Total HS 07 + HS 08	**565,469.24**	**665,623.36**	**17.71**

Source: Data gathered from Aliceweb Mercosul, 2012.

(Footnotes)

1. For further information see: http://ec.europa.eu/food/food/rapidalert/index_en.htm.

2. See http://www.mhlw.go.jp/english/topics/importedfoods/1.html.

3. See http://www.daff.gov.au/biosecurity/import/food/failing-food-reports.

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