

Implications of Standards and Technical Regulations on Export Competitiveness

Laura L. Ignacio¹

Abstract

Standards and technical regulations are commonly perceived as barriers to trade particularly when considering the often huge compliance costs and insufficient resources of African economies. The impact of these standards on their ability to compete will largely depend on the response of both private and public sectors. Experiences in some countries, specifically on agricultural and food products, show that the requirements of these standards are manageable and, in certain cases, investments and efforts towards compliance will prove to be worthwhile in the long-run.

As one of the papers on Export Supply Response, Capacity Constraint in Africa, this paper discusses how standards and technical regulations pose constraints to the competitiveness of exports and aims to provide guidance to research that will aid policy decisions.

Standards and trade

A system of standards is fundamental to the functioning of global trade. It reduces information asymmetry between buyers and sellers with regard to the characteristics of products and services, thus, protecting consumers from unsafe products while, at the same time, lowering search and transaction costs. It ensures compatibility which guarantees wide acceptance among buyers and promotes economies of scale for suppliers. Standards promote public policy objectives, for example, better working conditions for laborers and sustainable use of natural resources.

Standards may refer to the attributes of the product itself (“product standards”) or to the manner or conditions under which the product was produced or packaged (“process standards”). Standards are voluntary and are established by international standard-setting bodies or by private firms. Technical regulations are mandatory and are usually set by governments.

Standards, however, are based on preferences for quality and safety, and preferences and technology (by which standards are measured) of developed countries may be different from the preferences and technology of developing countries (UNIDO 2005). This discrepancy results to standards requirements that create complications and constraints to

¹ Consultant with the Agriculture and Rural Development Department, World Bank.

The views expressed here are those of the author and do not necessarily represent the position of the World Bank. The author wishes to thank Kees van der Meer and Cees de Haan for their valuable comments and suggestions.

developing country exporters who want to access developed country markets. This paper discusses the various implications of standards and technical regulations on export competitiveness focusing on trade on agricultural and food products and sanitary and phytosanitary (SPS) measures.

Africa's trade

The region's trade performance has often been characterized as being marginalized with the exports having a sluggish growth and contributing a receding share to global trade. In the period 1975-1984, the annual growth rate of exports was 6.9 percent; in 1985 to 1989, the annual growth rate was 2.9 percent (Mwaba 2000). Of the total developing country exports, Africa's share in 1980 was 20 percent, 10 percent in 1990 and 6 percent in 1998. The share of sub-saharan Africa in world exports went down from 3.1 percent in 1955 to 1.2 percent in 1990 (Labaste (ed.) 2005). A World Bank study analyzed the trade data for eastern and southern Africa whose share of world exports declined from 1.05 percent in 1990-1992 to 0.97 percent in 1999-2001 (Aldaz-Carroll *et al* 2004). The difference in percentage points may not be significant yet this translates to an additional US\$42 billion in exports had the higher share been maintained.

This poor performance can be partly explained by the region's continued dependence on the exports of traditional agricultural products that have declining world prices and low income elasticities. Export values of over 40 percent of these traditional products were declining for the period 1990-1999 (Ng and Yeats 2002). Other explanations for this trade performance are the region's trade restrictions and certain governance issues. Reforms have already been undertaken in the 1990s with the objective of opening up these economies to world trade. Distortions in the foreign exchange rates were removed through currency devaluations; import restrictions were lifted. Yet due to mixed results of modest gains and some adverse sectoral impacts, a lot of these trade reforms were reversed and trade restrictions were either reinstated or reinforced (Mwaba 2000).

Developments in agricultural trade

There have been significant changes in the international trade in agricultural products—a shift from traditional agricultural exports to non-traditional ones such as fruits, vegetables, fish and seafood, which are characterized by high income elasticity and have low rates of protection in developed countries (UNCTAD 2004). Trade in coffee, cocoa, tea, sugar and sugar products and textile fibers went down between the years 1980–1981 and 2000–2001 with the decline ranging from 18 percent to 11 percent; while trade in fruits and vegetables increased by 15 per cent, and fish and seafood by 12 percent. Similarly, there is an increase in the trade of agricultural products with higher value-added (processed foods). This trend could be observed in Africa's agricultural exports (Table 1). Exports of fish products and fruits and nuts are on the rise. It is to be noted, however, that in some sectors (trade in live animals, for example), informal trade (which is not captured by official statistics) is often more important.

Table 1. Export values of selected agricultural products for selected years (US\$M)

	1997	1999	2001	2003	2005	1997	2005	1997-2005
Total exports	31,725	50,642	66,597	77,185	72,541			
Total agricultural and food exports	5,295	6,206	8,422	10,174	11,278	% of total	% of total	% change of exports
Live animals	23	103	141	249	193	0.1	0.3	739
Meat and edible meat offal	37	54	191	207	56	0.1	0.1	51
Fish&crustaceans, molluscs etc	445	507	1,262	1,314	1,094	1.4	1.5	146
Dairy produce; birds' eggs; natural honey	53	70	50	76	61	0.2	0.1	15
Live trees&other plants; flowers, etc.	146	167	228	311	140	0.5	0.2	-4
Edible vegetables and certain roots	109	172	242	324	162	0.3	0.2	49
Edible fruit and nuts	684	952	693	1,078	1,667	2.2	2.3	144
Coffee, tea, mate and spices	1,136	1,291	1,310	1,312	628	3.6	0.9	-45
Subtotal	2,633	3,316	4,117	4,871	4,001			

Source: UN COMTRADE, accessed March 6, 2007.

Standards and technical regulations and export competitiveness

Greater trade in these perishable agricultural and food products have given rise to a higher risk of spread of plant and animal pests and diseases and consumption of products contaminated with microbial pathogens, toxins or chemical residues by the importing countries. Sanitary and phytosanitary (SPS) measures² are adopted to protect domestic populace from harmful contaminants and organisms in food products and animal and plant health from foreign pests and diseases that may adversely affect agricultural production or cause diseases in humans and this includes requiring foreign suppliers of “evidence” of safe food and agricultural products, including having an equally “safe” agricultural ecosystem. This aspect of the SPS measures, albeit unintentionally, creates restrictions on market access and difficulties for exporters, in particular, for small and medium-sized exporters from developing countries.

Private standards are increasingly assuming a dominant role in international agro-food trade, specifically, for the high-end of the agricultural and food markets of developed countries. Initially, private standards were created by retail food establishments to safeguard their reputation from negative repercussions and avoid the liabilities of having sold harmful food products. Increasingly, however, safety and quality attributes have become components of a competitive strategy for product differentiation. To better manage the different standards and regulations in the food industry, groups of private food retailers establish their own collective protocol that facilitates trade at the same time indicating to consumers a certain level of quality. EurepGAP is a safety and management system, a standard for good agricultural practices that was developed by Euro-Retailer-Produce Working Group. A similar private protocol is the British Retail Consortium (BRC) code.

² Measures applied to protect human, animal, and plant health or life from risk arising from the entry, establishment, or spread of a hazard (OIE).

However, there are apprehensions that these standards and regulations are being used as discriminatory trade barriers. Ponte *et al* (2007) provided an example of the use of SPS measures as a discriminatory instrument. A statement by the EU food safety authority claiming high levels of cadmium from swordfish caught from the western Indian Ocean reduced imports of said product; yet other food products, such as crustaceans and pig, sheep and cattle kidneys are allowed higher levels of cadmium. It is to be noted that standards do set an absolute barrier to trade with regard to concerns about animal diseases and plant pests. For example, countries with endemic Foot and Mouth disease (FMD) are not allowed to export live animals or fresh chilled animal products to countries without FMD.

Using the World Bank Technical Barriers to Trade database consisting of data of 619 firms from 17 developing countries from five regions (described in Wilson and Otsuki (2004)), Chen *et al* (2006) examine the impact of standards and technical regulations on a firm's export propensity (measured with overall market share) and market diversification (measured with number of export markets). The variables which most affect adversely a firm's propensity to export are testing procedures (reduced exports by 9 percent), difficulty in getting information (18 percent) and greater inspection time (3 percent). Another finding implies that varying standards across different markets cause diseconomy of scale and reduce the likelihood of firms entering more than three markets.

The World Trade Organization (WTO) Technical Barriers to Trade (TBT) Agreement and the Sanitary and Phytosanitary (SPS) Measures Agreement put discipline in the adoption and implementation of public standards. The SPS Agreement, in particular, while acknowledging the right of countries to protect human, animal and plant health by implementing through the application of SPS measures, promotes transparency and encourages governments to follow international standards though they may set their own regulations as long as these are based on science (estimates of level of risks, for example) and do not unjustifiably discriminate among exporting countries. The reference standards for SPS measures are those developed by the joint FAO/WHO *Codex Alimentarius* Commission ("Codex") for food safety; the FAO International Plant Protection Convention (IPPC) for plant health; and the World Organization for Animal Health (also, *Office International des Epizooties* or OIE) for animal health. The TBT and SPS agreements do not impose additional restrictions on exports but, rather, regulate the imposition and enforcement of standards and technical regulations by public authorities.

Nonetheless, standards and technical regulations, albeit appropriate and just, are requirements to trade and market access that exporters (and producers and processors) must comply with. Competitiveness is no longer limited to production efficiency. Market access requires compliance to standards and technical regulations and, most especially for perishable products, the capacity to manage food safety and animal and plant health risks. Thus, standards and technical regulations affect competitiveness by restricting entry to export markets and or by imposing compliance costs that may diminish existing competitive edge.

Management of sanitary and phytosanitary risks

SPS management consists of a system of protective measures established along points in the food chain. Legislations may be needed to put in place institutions to monitor and enforce controls, designate offices, define functions, responsibilities and procedures and set provisions for enforcement. Food processing and retail establishments are inspected and certified on their hygienic status. Surveillance and monitoring of human and agricultural health hazards, including control of imported agricultural and food products, are carried out. In case of an outbreak, a country has an emergency response system. Diagnostic capacity is critical to test for chemicals, pathogens and other contaminants in food and water for human health, and pests and diseases for plants and animals. The standards used for these SPS measures, however, should be appropriate to the level of risk present. Developing countries commonly adopt standards and procedures set by the international standard-setting bodies because establishing their own standards entail performing risk assessments where they have very little or no capacity at all. Finally, for a country to manage SPS and trade issues, countries should be able to participate in international fora on standard-setting.

Countries, however, are unlike in the extent to which they have established their SPS system. Moreover, the capacities and risks of developed countries differ from the capacities and risks of developing countries creating impositions on exporters from developing countries.

Export sector: compliance with requirements in high-end markets

For the exporters, there are public and private standards and requirements, in particular, for products intending to access high-end markets. The requirements for processed agricultural and food products are focused on the implementation of processing facilities of quality and safety management systems such as the Hazard Analysis and Critical Control Point (HACCP)³ and Good Manufacturing Practices (GMP). Buyers of animal and plant products may be required to have Good Agricultural Practices (GAP) in place. Products are tested for residues of agrochemicals like pesticides and veterinary drugs. Animal and plant products should not carry pests and diseases that may be harmful to the importing country's ecosystem.

All of these compliance efforts need to be validated or proven. Importers require certification of the use of HACCP, GMP, GAP or other safety and quality systems (see Box 1); testing facilities have to be accredited; national plant authorities have to certify the health of plant products; and a national Competent Authority has to attest to the safety of exported animal products.

Exports of plant and animal products to the United States generally demand a risk assessment which requires data on pests and diseases gathered from surveillance and

³ HACCP is a food safety management system for ensuring food safety that monitors critical points in the food chain by identifying specific hazards and measures for their mitigation (FAO Food Quality and Safety Systems Manual 1998).

monitoring. In cases where the country has no capacity to undertake surveillance and gather pertinent epidemiological data, it will not be allowed access to markets even if the private sector has the capacity for safe and quality products.

Box 1. Efforts on certification

A number of donor assistance projects focus on certification of establishments, particularly the EurepGAP, to gain access to markets.

There are four ways of obtaining a EurepGAP certification:

- individual certification;
- group certification, for a farmer group recognized as a Produce Marketing Organization (PMO);
- individual certification for a EurepGAP-benchmarked national or regional standards; or
- group certification for a EurepGAP-benchmarked national or regional standards.

With the assistance of COLEACP⁴, UK and US, the Kenyan Fresh Produce Exporters Association (FPEAK) is starting to develop a KenyaGAP benchmarked with the EurepGAP protocol. The primary aim is to have an EurepGAP system which can be applied to smallholder production. This arrangement would be cost-effective for Kenya given the country's large number of small farmer groups and volume of agricultural exports to the EU. This effort needs government support to be widely accepted in the country. Extending this set-up on a regional level to include the main horticultural exporting countries would benefit the entire region. Certain stakeholders in Ghana and Senegal are considering the same goal.

In a USAID/World Bank project in Ghana, 32 growers from a farmer-owned organization obtained an EurepGAP group certification. A preliminary assessment of the project reveals:

- that a minimum of at least one hectare is required to be able to profit given the certification costs incurred;
- all the certified growers made a profit because the project subsidized investment costs but long-term profitability is a concern.

Another report was cited suggesting two hectares of land to guarantee returns from EurepGAP certification.

Currently, Ghana's Ministry of Food and Agriculture, with the assistance of the German Technical Cooperation (GTZ) and USAID, is undertaking another initiative to obtain group certification for ten pineapple farmer groups.

Source: World Bank 2005c

Requirements specific to EU For the export of animal products, the country, first of all, must be included in a list of countries allowed to export to EU. This means that the country has undergone inspection by EU's Food and Veterinary Office and was found to have satisfied EU's animal and public health requirements. The exporting firm, then, must be included in a list of establishments approved by the exporting country's Competent Authority that has inspected said firm on whether it fulfills EU requirements. For food of plant origin, the main requirement concerns the level of residue of agrochemicals. The level of residue of a particular chemical in a specified plant product should be below the maximum residue level (MRL) set by EU for that chemical/product combination. However, if there is no established EU-wide MRL but a country/national MRL, the product may be sold only in that country. If there is no EU or national MRL,

⁴ Europe/Africa-Caribbean-Pacific Liaison Committee

the exporter or chemical firm needs to do a risk assessment to obtain import tolerance. Without risk assessment, this tolerance level is set to zero, making access to EU markets difficult. For food processing firms are required to be certified of HACCP plus other requirements of the private retail sector.

In the Nile perch case (see Box 2), the restrictions resulted from several concerns of the EC: with the salmonella, there was concern about hygiene standards; with the cholera incident, the food safety situation in the countries were of issue; and with the fish poisoning in Kenya, the EC was concern with the cross-border movement of fish among the three neighboring countries.

Box 2. Nile perch of Kenya, Tanzania and Uganda

For the three countries surrounding Lake Victoria – Kenya, Tanzania and Uganda – the exports of Nile perch to the European Union is a profitable trade. In the 1990s, however, these countries encountered restrictions from the EU. In 1996, a number of consignments of Nile perch from Kenya, Tanzania and Uganda was found contaminated with high levels of bacteria (including *Salmonella*) causing Spain and Italy to issue an import ban on fishery products from the three countries (World Bank 2006a). On April 1997, the EU imposed a mandatory test for salmonella on fish imports from the three countries. On December 1997, due to a cholera outbreak in East Africa, the EU banned imports of fresh fish from the three countries and ordered a test of frozen fish for *Salmonella* and *Vibrio cholerae*.⁵ These restrictions were lifted on June 1998. The costs for all the required tests were borne by either the exporters or importers. Once again, following reported cases of fish poisoning in Lake Victoria, the EU banned, in April 1999, imports of fresh and frozen fish from the three countries. EU inspections were undertaken in the three countries and the restrictions were lifted in 2000. The fish sector has since recovered for all countries. The value of Uganda fish exports to EU in 2005 was about US\$120 million (World Bank 2006a).

Response All three countries undertook significant reforms in regulations to comply with EU requirements and invested (private- and donor-funded) on upgrades in facilities, improving hygienic conditions in all stages of handling and processing. One difference was that Tanzania already had a designated authority for fisheries matters – Fisheries Department – and, unlike Kenya and Uganda, did not have to go through major institutional changes to have a Competent Authority for fish and fishery products (World Bank 2005a).

Kenya Competent Authority In 1994, the Public Health Department of the Ministry of Health was designated as the Competent Authority to approve processing establishments for export to EU; although, in fact, there were multiple agencies responsible for fish and fishery products—inspecting and granting and revoking licenses. A task force was established (Public Health Department, Fisheries Department and Bureau of Standards) to coordinate procedures for approving fish processing establishments but did not prove to be effective. In 2002, it was decided to assign a single agency to regulate food safety controls of fish and fish products and approve processing establishments to export to EU. The Fisheries Department was made the Competent Authority in 2002.

Costs The three countries incurred substantial costs to undertake the adjustments mentioned above. In Uganda, investments to upgrade processing plants amounted to about US\$10-13 million with several more millions spent on inspection systems and landing sites. It was estimated that the

⁵ At the WTO SPS Committee, WHO raised the issue that in this case, “the risk is small and can normally be dealt with by means other than an embargo on importation” (Henson and Mitullah 2004).

fixed investment for the period 1997-2001 was about 6-8 percent of the value of exports for the same period while the recurrent costs of both government and private sector were about 1 percent of annual export revenue (World Bank 2006a). Similar figures were derived for Tanzania, the estimated one-time investments for the processing sector was US\$24.9 million which was about 7 percent of the value of Nile perch exports for 1999-2003. The study further noted that since the processors of both Kenya and Uganda incurred similar costs, there would be little effect on export competitiveness (World Bank 2005a).

Industry associations A major positive outcome for the industry is the formation of associations among the fish processing establishments—the Ugandan Fish Processors and Exporters Association, the Kenyan Association of Fish Exporters and Processors, the Tanzania Fish Processors Association (marine processors around Dar es Salaam) and the Lake Victoria Fish Processors Association of Tanzania (Nile perch processors). The Ugandan association allows the industry to act on policy issues more effectively; the Tanzanian association helped in instituting better hygiene controls through the implementation of codes of practice; and the Kenyan association participated in government negotiations with the EC. These associations are intending to form a regional association to better address common concerns and to represent the industry in international fora.

Impacts One consequence of the EU ban was an expansion of fish trade away from EU. In 1998, Tanzanian exports to EU comprised 70 percent of total fish and fishery product exports. By 2002, this share became 64 percent and was 48 percent in 2003 (World Bank 2005a). In Kenya, there was increased fishing effort for other species considering the fall in the price of fresh Nile perch fillets in both EU and non-EU markets (World Bank 2005b). Considering the substantial share of the EU fish market, the ban had unfavorable impacts on the supply chain for all three countries, most especially in the short-term. Processing plants either closed down or operated way below capacity and plant workers were laid off. Local communities depending on the processing plants and other fishing activities also suffered.

Processors from Tanzania pointed out that the implementation of higher hygiene standards together with greater diligence demanded from the staff resulted to a better product quality with wider acceptance even in non-EU markets.

Sources: World Bank 2005a, 2005b, 2006a

Roles of stakeholders

Involvement is needed at various levels—from the national governments, to industry organizations and individual firms. The public sector is responsible for the institutional and legislative framework required for the system to function; it also carries out surveillance and monitoring activities including border control. A major requirement for the public sector is transparency, that is, all legislations and regulations are unambiguous and understandable, allowing very little or no discretionary powers among enforcement officers such as inspectors. These regulations should be made available to all stakeholders—producers, processors, retailers, consumers and foreign buyers. The public sector must be careful that these legislations and regulations truly add value, not greater transaction costs, to the industry and individual firms (with multiple or unnecessary inspections, for example) and that the public sector does not assume functions that can be performed (perhaps, better and more cost-effectively) by the private sector.

At the industry level, private organizations may work for the development of standards and garner the support and involvement of the government. In Uganda, honey production is dominated by small-scale producers (98 percent of the total production). The Ugandan National Apiculture Development Organization (TUNADO) is the umbrella organization of the beekeeper organizations and processing companies. Ugandan honey is primarily sold locally, informally and through the established supermarket chains. With urging from TUNADO, the government was able to comply with the requirements for exporting honey to the EU—development of a honey standard and designation of a Competent Authority. With funding from Shell Foundation, the rest of the requirements were also satisfied and Uganda is now permitted entry into EU. However, there are still gaps in food safety control program for the honey sector. In the case of the fishery industry in Kenya, Tanzania and Uganda (see Box 2), the industry associations made it easier to address policy concerns and undertake collective action.

At the firm level, processing plants implement GAP, GMP, HACCP or some other quality management system. The private sector (industry and individual firms) has the important role of and should take initiative in providing technical and market information to the public sector to contribute in policymaking—the private sector, after all, is more familiar with market trends, requirements, costs and revenues and will stand to gain most in export markets. In SPS policymaking, a strong coordination between the public and private sectors would be ideal and will avoid the setting of impracticable or unnecessary requirements.

Efficient physical infrastructures, notably transport and cold storage, though not core components, are vital complements of safety systems, especially for perishable plant and animal products. Clean water is essential for hygiene purposes, for food processing facilities, and for the production of ice for fisheries, among others. The absence or inadequacy of these infrastructures will affect competitiveness either by lowering the quality and safety of products or by creating higher transaction costs. Thus, capacities to comply with sanitary and phytosanitary measures involve several sectors and actors from production and processing to marketing, a weakness in one part may significantly affect the outcome. Quality production will be wasted with a poor handling or transport system (Labaste 2005). In the same manner, an efficient supply chain will be invalidated by ineffective or non-transparent regulatory system.

Costs of complying with standards and technical regulations

That standards do increase production costs is undeniable. Compliance costs include one-time investments such as the upgrade of laboratories, installation of equipment, redesign of products and processes, and recurrent costs such as costs of maintenance, testing and certification, among others (see Box 2). The fixed component affects the decision of a firm to enter or stay in a market while the variable costs affect the unit price and volume of exports (UNIDO 2005). The magnitude of the incremental costs is determined, to a large extent, by existing institutional infrastructures and the effectiveness of the supply chain arrangements in place. The functioning and coordination (or lack thereof) of these public and private infrastructures will augment or reduce compliance costs.

With the same World Bank TBT database, Maskus *et al* (2005) look at how compliance to standards and technical regulations drive up production costs in developing countries. Their findings affirm that standards increase short-run production costs with the additional labor and capital. Based on the survey data, the average fixed costs of compliance is \$425,000 per firm or about 4.7 percent of value-added. The estimated increment in variable costs of a 1 percent increase in investment ranges from a low of 0.06 percent to a high of 0.13 percent.

The following table from UNIDO's Industrial Development Report (IDR) 2005 shows the certification costs of certain management systems in relation to total sales (not limited to SPS measures). HACCP certification is a small percentage but the ISO certification could go up to 0.18 percent and 0.35 percent.

Table 2. Certification costs and sales

Certification	Cost relative to total sales* (%)
ISO 9000	0.0004–0.3500
ISO 14000	0.02–0.18
HACCP	0.001–0.006
IRAM 92/98 (electrical safety)	0.025–0.075
API (steel)	0.0013
TÜV (steel)	0.0001

Source: UNIDO Survey, from UNIDO IDR 2005.

Note: * Includes certification and adaptation to norm requirements.

In a number of studies by the World Bank on high-value agro-food products, the level of investments for the non-recurrent costs range from 0.5 to 5 percent of a multi-year value of trade and recurrent costs are about 1-3 percent of annual export sales. In particular, for Kenya's horticulture export industry, Jaffee (2003) differentiated the overhead costs for the "high-care" business to be about 5 percent of turnover while that for the premium, pre-packing business to be about 2 percent of turnover. As discussed in the case study on Nile perch, Uganda's fixed investment to comply with EU's requirements was about 6-8 percent of export value (1997-2001) while Tanzania's investment on the processing sector was 7 percent of export value (1999-2003).

Costs to prove compliance Inasmuch as the responsibility to demonstrate compliance falls on the seller, more costs are to be incurred in proving conformity. There may be duplicate tests to satisfy differing requirements of importers or importing countries.

Cost-sharing The Kenya horticulture case study provided an example of sharing of compliance costs among the stakeholders (World Bank 2005b). KEPHIS recovered its costs on the laboratory upgrade by charging user fees. Exporting firms coordinate on audit schedules and share auditing costs. EurepGAP certification of outgrower farmers are subsidized by leading companies and donors. Private firms, NGOs and donor agencies are assisting smallholder farmer organizations with integrated pest management and general good agricultural practices.

Ensuing benefits For the exporters, benefits from compliance could be in the form of cost savings from having fewer rejections and spoilage and having access to more markets. For the national government, the cost savings come from efficient use of resources resulting from the streamlining of public offices. The improved management of plant and animal health hazards benefits the domestic agricultural sector. The health benefits resulting from safe agricultural and food products initially accrue to consumers of the foreign market but may spill over to the domestic populace if the same safe practices and processes are applied for goods sold in the domestic market. These various forms of benefits may have wide-ranging spillovers, going beyond the export industries. In high-end markets, “safe” products receive higher prices.

Varying impacts The impacts of standards and requirements on costs and benefits (and competitiveness) vary across countries and across products and, within a country, vary across industries, across firms, between short and long terms and among the different players (see Box 3). Effects are different at the national level and at the sector level (UNCTAD 2004). For environmental requirements, for example, firms using a pollution-intensive process will have higher costs than a firm with an environment-friendly process. The benefits of safer food and better agricultural health may be greater at the national level than at the level of the firm.

Box 3. Additional implications

On labor With the additional costs incurred for compliance that reduces the margin for profit, there may be a tendency to reduce the costs of input, particularly, labor at the lower end. Dolan and Sorby (2003) noted the change in employment for high-value agriculture commodities from regular and permanent employment to more flexible, informal work arrangements such as casual work, piece-rate wages and temporary employment. Similarly, Kenya fishermen received lower landed prices during the restrictions (Henson and Mitullah 2004).

On smallholders Especially for the horticulture export industry, the strict safety requirements (notably, traceability) have, unfortunately, excluded smallholders. Organizing and monitoring a large number of small farmers imposes a high cost on transaction, thus, most of the exporters acquired their own farms. Also, the private buyers were concerned about the smallholders’ capacity to comply with food safety and pesticide regulations (Dolan and Humphrey 2004). In Zimbabwe and Kenya, there are private sector initiatives that organize smallholders into supervised outgrower schemes, providing support with the scale, quality and traceability requirements (FAO 2004).

Sources: Dolan and Sorby 2003, Henson and Mitullah 2004, Dolan and Humphrey 2004, and FAO 2004.

Compliance with standards and technical regulations should be undertaken when benefits exceed the cost (see Box 4). However, weighing costs and benefits is not that simple—while the huge compliance costs, particularly the initial investment costs, are immediate and tangible, the beneficial effects are delayed and less discernible.

Box 4. Potential honey trade of Zambia

South African authorities currently require imports of Zambia honey to be irradiated as precaution against the bacterial disease American Foul Brood (AFB). However, irradiation darkens the honey invalidating the organic certification. This procedure is being done because the presence of AFB bacteria in Zambia is uncertain. A World Bank report (World Bank 2006b) recommends that tests be done on specimens to finally determine the absence (or presence) of the bacteria and to undertake necessary mitigation procedures. The tests required to verify AFB would cost about US\$30,000. In return, there is an estimated potential annual return of US\$500,000.

Source: World Bank 2006b

Responses and approaches

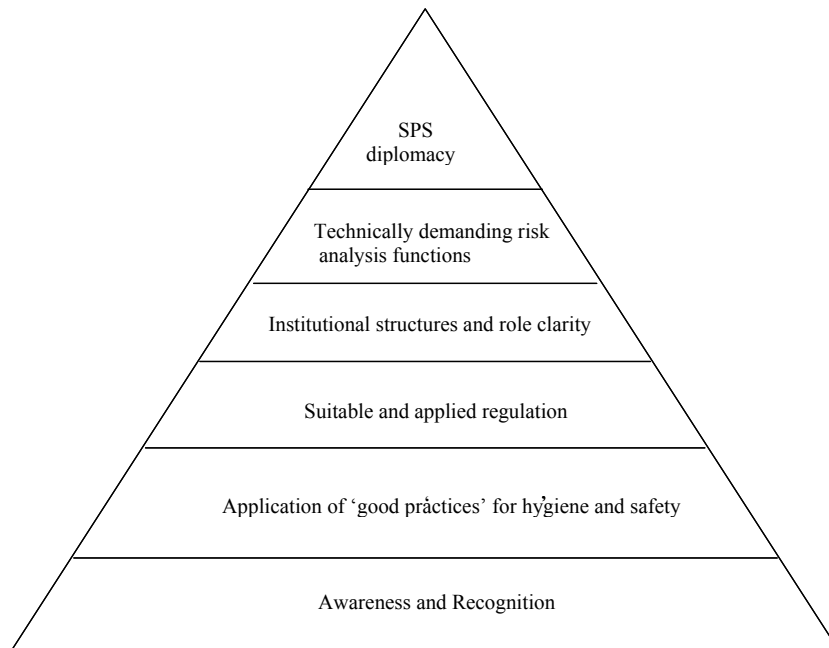
Compliance demands a range of functions (such as testing and inspection) and an array of capacities (mostly technical facilities and skilled labor). It may not be optimal to put up a complete SPS system for the short and medium terms. A country may decide to establish an SPS system piecemeal with selectivity and prioritization, putting in place a particular component or focusing on one specific health concern or export product or market. Nonetheless, this still has to be done strategically. Decisions on which measures to adopt should take risks into account, and be based on an evaluation of costs and benefits. Costs may refer to costs of putting up diagnostic facilities and equipment in the case of public health; or the costs of upgrading processing facilities, in the case of exports. Benefits, in turn, may refer to the reduction of hazard risks in the case of human and agricultural health; or export revenue, in the case of access to foreign markets. In this way, resources are expended on measures that are necessary and or profitable.

Sequencing Figure 1 is a simplified representation of the fundamental SPS functions related to trade. It represents an effective sequencing of functions. The function at the bottom is the most basic foundation. It is a fact that promoting awareness and practice of hygienic practices among producers and processors creates a substantial value-added to the system that facilitates the imposition or enforcement of other measures. It is then easier to add on to the system more complicated components such as legislations, institutions and risk analysis. SPS diplomacy consists of participation in standard-setting and trade negotiations. It is easier to build on the system if the foundation is solid; weakness and or gaps in the lower functions may render the entire system shaky or unsteady.

Risks For the domestic human and agricultural health, policymakers should look at the risks from hazards affecting human health, such as food- or water-borne diseases, or animal diseases that pose significant threat to human health (avian flu, for example) and hazards affecting agricultural productivity; putting effort and resources on concerns with the greatest risk. Establishing a formal risk analysis infrastructure, however, calls for significant technical capacity, skills and resources that developing countries usually do not have (see Box 5). This does not mean that risks be disregarded. At the very least, policymakers should be cognizant of hazards, taking into account the incidence of food- and water-borne diseases, and should decide on an intervention that will be of most benefit considering the cost of said intervention. For exports, priorities should be based

on a comparison of costs of compliance to the requirements of importers and or importing country with potential export revenue.

Figure 1. Hierarchy of trade-related SPS management functions



Source: World Bank 2005d

Box 5. Risk analysis structure

Risk analysis, within the context of SPS management refers to a decision-making process made up of three interrelated functions: risk assessment, risk management and risk communication. *Risk assessment* evaluates hazards, including the likely exposure to the hazard and an estimate of the adverse effect of exposure. *Risk management* studies preventive and/or control options given the findings from risk assessment. *Risk communication* is sharing the information to stakeholders on how to prevent, minimize or control the risks. The process is most efficient when risk assessment and risk management functions are separated, although, constant interaction between the risk assessors and risk managers is essential. The capacity to perform risk assessment requires specific skills, training and data requirements and, as such, is usually a component of donor projects and technical assistance.

Source: World Bank 2007

Responses Case studies discussed in this paper show examples of how the public sector and industry have responded to the demands of export markets—stories of success because of standards (rising standards impelled private stakeholders to upgrade Kenyan horticulture industry (see Box 6)), despite the standards (restrictions resulted to public and private efforts to improve Nile perch industry (see Box 2)) and with “low” standards (Ghana pineapple profited in EU low-end markets (see Box 7)). Indeed, developing countries have a choice of strategic responses to standards and technical regulations (World Bank 2005d). The public and private sectors may choose to transform institutions and processes to comply with safety and quality requirements. The public sector may get

involved with standard-setting and or direct complaints about restrictions to the SPS Committee of the WTO. The private sector, as in the case of the pineapple industry in Ghana, may opt to stay away from markets with strict standards and enter markets with less-demanding standards but with relatively lower prices as well.

Box 6. Kenya horticulture

Kenya is the largest non-EU supplier of flowers in Europe (World Bank 2005b). Of the total value of horticulture exports of Kenya in 1999 (of which 90 percent went to Europe), about 51 percent were flowers, 40 percent were vegetables and 9 percent were fruits.

During the time when standards in EU were getting stricter and UK retailers were starting to develop industry protocols, leading exporters of Kenya decided to service the upper-end supermarkets by developing new product lines and adding value to their products. To gain more control of the supply chain, a number bought their own farms while others tighten supervision of outgrowers. Investments were made towards expansion of pack houses, training of staff and upgrade of facilities. For the period 1990-2003, Kenya's fresh vegetable exports had increased in value from US\$25 million to US\$150 million.

The main factor that helped Kenya established the reputation of being a reliable supplier of good, quality flowers is the leadership of its private sector that was able to organize the vertical structure of production, post-harvest, transport and marketing and the continual support of the government. In addition, the country has suitable climate, good infrastructure and good transport facilities. Yet, the government and the industry are still working on a number of changes to keep up with the evolving trade requirements.

Hovering SPS concern The *bactrocera dorsalis* specie of the fruit fly is one of the important quarantine pests that present a high risk of spread and establishment in the importing country. Access to high-value markets would require either the eradication of the pests or products undergoing treatment acceptable to the importing country. An infestation was observed in Kenya and Tanzania in 2003. The three countries of Kenya, Tanzania and Uganda have already asked FAO to look into strategies to either manage or eradicate the pest.

Source: World Bank 2005b

Box 7. Ghana pineapple

Ghana has a successful pineapple export trade to the EU, focusing on the low-end segment of the market by competing on price. In 2004, export reached about US\$22 million (Danielou and Ravry 2005) making Ghana, one of the big suppliers of pineapple to the EU. However, it may be losing its market share with the coming of MD2 – a new pineapple variety from Costa Rica.

The country's horticulture industry is driven by the private sector. A large portion of the pineapple export industry is made up of smallholders (over 5,000 rural households) that contribute about half of the total export value (World Bank 2005c). In 2003, the first multinational operator, Golden Exotics, Ltd. (*Compagnie Fruitière*) started its operations.

A strategy to preserve or increase the sector's EU market share would be to improve quality of product. The larger exporters have started their own quality assurance programs, most often funded by donors, to obtain EurepGAP certification. The concern, however, is the certification of smallholders. There are a number of donors providing assistance with the support of the government (see Box 1).

Source: World Bank 2005c

It is often the case that large companies, often with foreign ownerships, have no problems or little difficulty in complying with SPS requirements—they have the necessary infrastructures (cold chain, HACCP-compliant facilities), testing equipment and facilities, and knowledge of alternative biological controls against pests and diseases. Capacities are more of a problem for the small and medium-sized establishments.

Proactive and reactive Generally, in dealing with standards and technical regulations, policymakers may take a reactive or proactive approach. In most countries, the lack of capacities and resources causes a country to act only when a crisis arises such as an outbreak or a restriction on exports. Only then will the public sector make institutional or legislative changes or promote HACCP and hygiene practices. A proactive approach means having in place an SPS system, being able to anticipate potential difficulties such as failure of system, greater risks or hazards or an increase in the stringency of standards and requirements and respond appropriately. With the continuous advances in technology and increasing incidence of human and agricultural diseases, standards and technical regulations are constantly being amended. Developing countries would do well to start putting in place legislations and institutions on standards in addition to improvements in infrastructures (both physical and technical) to protect domestic human and agricultural health and to enable their export industries to be competitive in the growing global trade.

Sustainability A long-term strategy to manage SPS should include coordination with the private sector to appropriately incorporate their plans; an assessment of needs to identify most pressing concerns and make efficient use of resources (see *Topics for research*); and a mechanism for cost recovery to ensure sustainability. It is usually the case that SPS measures are implemented with the help of donor funding only to be discontinued upon the termination of assistance.

Appropriate solutions Policymakers should beware of easy solutions to SPS problems; They should also carefully identify the problem lest they implement measures that create additional problems or impose additional, yet unnecessary, costs for the private sector.

- Several donor projects provide assistance to trade-related animal diseases yet if the country has very little or no formal trade in animals then resources are more useful being spent on diseases that affect productivity.
- Informal border trade of live animals is significant among African countries. If there is a concern with regard to an animal disease that is present in two neighboring countries, a stricter border control may not be a very effective measure considering the country borders, the presence of the disease in both sides of border (thus, not very much economic impact) and the ease with which traders can alter trading path. Perhaps a more useful measure is a regional effort to control the disease and limit its effect on productivity.

Alternate markets In cases where the capacities of private sector is inadequate to comply with export requirements of high-end of developed markets, there are alternative markets to consider which have less-demanding requirements. These would include the

low-end of developed country markets, markets within the region, and markets of other developing countries in other regions (for example, developing countries in the Middle East, the non-EU Eastern European countries, and Central and South Asian countries). Finally, the high-end of domestic markets (supermarkets and hotels) is also an option, although, this will have quality and safety standards as well, maybe still less-demanding than the high-end of developed markets (see Box 8).

Box 8. Zambia's domestic concerns

Zambia's problems on food safety and agricultural health concern the domestic market more than the external market (World Bank 2006b). Plant pests and animal diseases cause more harm to productivity than to external trade. Zambia may have more restrictions on imports than its trading partners on exports due to local groups using SPS measures to protect their interests. Domestic consumption of high-value, SPS-sensitive foods is significantly bigger than current (and future) trade of similar foods. Local consumption of vegetables was US\$372 million in 2003, higher than exports and imports of fresh and processed horticultural products of about US\$15-20 million per year. Producers, processors and traders, thus, tend to focus more on the high-end of the domestic market and neighboring countries than to the more distant markets. Agro-food trade of Zambia is hardly affected by SPS measures and is more influenced by market factors.

Source: World Bank 2006b.

Regional cooperation There may be benefits from regional cooperation, particularly if it involves sharing of expertise and capacities. Activities involving transboundary pests and diseases, such as surveillance and monitoring and control, are most effectively carried out with participation of and coordination among neighboring countries. The industry associations in the fish processing sectors of Kenya, Tanzania and Uganda will have a stronger voice as a regional group when negotiating with EC. Other areas of possible regional coordination that will create economies of scale are testing facilities, certification bodies, and pest risk assessments.

There have been efforts towards regional harmonization of standards. Member countries of the East African Community (EAC) signed a protocol on standardization, quality assurance, metrology and testing and 550 standards have been developed by 2005, a few have been adopted as national standards by the member countries (World Bank 2006a).

Donor assistance

There had been numerous technical assistance for standards-related capacity building. Both Agreements on SPS and TBT recognize and have provisions for technical assistance. One issue is appropriate and efficient use of technical assistance. Coordination is required among different public offices and donor agencies to avoid overlapping or duplication of projects or inefficient use of funds. Another issue is that of sustainability of undertaking after the initial inflow of assistance. In Uganda, assistance was provided for surveillance, diagnosis and emergency response for FMD but outputs were still not available a few months later; two laboratories were initially upgraded and equipped by donors yet this lab improvement did not extend to the remaining district laboratories (World Bank 2006a).

Topics for research

As discussed above, a complete and effective SPS management is beneficial to human and agricultural health of domestic populace and trade but it demands investments whether in facilities, equipment and human skills, and for developing countries with limited resources, a pragmatic approach of selectivity is an option. Decision making to determine priorities should be based on information on markets and requirements, options, costs and benefits.

The following topics are, therefore, proposed to assist policymakers, both public and private. The topics, though presented in broad and general terms, should be applied for specific products and markets, most particularly, the cost-benefit assessments. The topics are also presented as short, separate topics, but altogether, they emphasize the issues discussed above—for each specific product, determine what is exactly needed, the options and respective costs, and after an evaluation of costs and benefits, the most cost-effective solution; and if compliance to a market's requirements is not likely to produce positive benefits, it may be worthwhile to consider alternative markets (discussed under topic of *Potential markets*). Also, it would be prudent to find out whether previous studies have been done on same product or market before undertaking the study then the new study can then build on what has been done and add value to the issue.

There are a number of potential issues for research given the many aspects and difficulties of SPS that require solutions. Information gathering and careful study of the following topics for individual countries (or for specific products and or markets) will provide useful material and guidance for policymakers, private entrepreneurs, industry organizations and foreign investors:

- *Potential markets* Research to look into export markets for non-traditional products—which sectors/products have the potential for a particular export market but may be constrained by the requirements of such markets. This may include possible niche markets (for example organic, specialty or fair trade) for traditional commodities such as coffee, tea or cocoa, among others. Study will look at standards requirements of importers and importing countries and will examine capacities of both public and private sectors to determine possible interventions to build capacity to be able to satisfy requirements of said markets. To widen the options of suppliers, study may well consider not just the developed country export markets but also markets of other developing countries, regional markets and the high-end of the domestic markets, such as supermarkets or hotels.
- *Anticipated changes* A proactive variant of the research topic above is to study existing trade and possible changes in standards or trade requirements and identify necessary capacity building to improve on weaknesses or gaps in system to cope with anticipated changes.
- *Minimum requirements of diagnostic capacity* The study should start with existing trade and the required laboratory services (or may expand to include

potential markets), identify specific diagnostic requirements and current practices of compliance (use of in-country public and or private capacities, regional or importing country facilities). Study will compare costs of present practices with alternate options (for example, if currently using a third-country facility, compare with putting up own facility).

- *Information and education strategy* Study to develop an information and educational campaign to address the lack of awareness on food safety and agricultural health problems not only among the private sector producers and consumers but among public officials as well. Campaign will promote hygienic practices in food handling and food preparation.
- *Cost-benefit analysis* For a specific product, the benefits to be gained from a proposed policy or compliance is compared with the estimated costs of the policy or the costs incurred to comply. The study will demonstrate whether a policy or compliance is worthwhile. When looking at potential export markets where there is no export yet, estimated export revenue may be based on similar products or markets; for exports where access has been cut-off, benefits are based on past export performance. Cost-benefit analysis is more useful and tractable when studying a specific intervention or policy for a specific product.
- *Assessment of needs* It may be useful to identify the capacities that a country lacks for an effective SPS management. An assessment of SPS needs may concentrate on the export sector, a particular product or market; or it may be broad, looking at the entire SPS system. Assess for each of the three areas of food safety, animal health and plant health, if there is an existing system, and if it is functioning and effective.⁶ Examine each of the components of legislative and institutional frameworks, inspection and certification, testing and diagnosis, surveillance and monitoring, emergency response and risk analysis or at least the extent to which risks are incorporated in policymaking. In all of these areas and components, identify weaknesses, overlaps and gaps; if the public sector services are consistent with private sector needs; and determine needs in terms of facilities, equipment and, most importantly, the skills (or the training required) to efficiently carry out the various functions. Study if there is a cost recovery mechanism to sustain operations. Such assessment will help public sector determine where government intervention or collective action by private sector will be most effective. It will provide guidance to both country and donors in identification of assistance or projects. The World Bank has done several national SPS strategies, as mentioned below.

World Bank work on standards

The World Bank has done studies on standards that may be useful for reference:

⁶ The three standard-setting bodies OIE, IPPC and Codex have guidelines on SPS management related to animal health, plant health and food safety, respectively. IPPC has a phytosanitary capacity evaluation.

- *Cost of compliance studies* were done for the following products and countries/region:
 - Fish and fish products of Kenya and Senegal
 - Fruits and vegetables of Kenya
 - Live animals of Ethiopia
 - Groundnuts of Senegal

Website:

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:20334931~menuPK:222955~pagePK:148956~piPK:216618~theSitePK:239071,00.html>

- *Country assessments and action plans* were made for Kenya, Tanzania, Uganda and Zambia

Website:

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:21028381~pagePK:210058~piPK:210062~theSitePK:239071,00.html>

World Bank site on Standards Research:

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:20334923~pagePK:148956~piPK:216618~theSitePK:239071,00.html>

Diagnostic Trade Integrated Studies

The Integrated Framework program provides assistance towards expansion of trade.

Studies for a number of African countries have been done.

<http://www.integratedframework.org/>

WTO OECD Database

The Doha Development Agenda Trade Capacity Building Database (TCBDB) is a joint effort of the WTO and OECD on national and regional trade-related technical assistance and capacity building projects.

<http://tcbdb.wto.org/>

It may be very useful to be able to glean knowledge from these experiences, identify measures that will mitigate negative impacts and strategies that will exploit these standards requirements to the advantage of African exports.

Summary

Standards and technical regulations serve to facilitate trade by guaranteeing compatibility of products among different markets and providing transparency in market transactions with the relevant information given to buyers. These standards, however, have become a significant component of international trade that has considerable implications on the competitiveness of suppliers, most particularly, of developing countries. For agricultural and food products, health concerns and food scares resulted to the increasing use of standards and technical regulations to manage risks from agro-food trade. In the case of African countries, in their strategy to diversify agricultural exports towards high-value agro-foods, they face wide-ranging safety and health requirements creating nontrivial

incremental costs adversely affecting the exports' competitiveness. Although the paper focuses on agricultural and food products and SPS measures, it is hoped that the discussions could be extended and applied to other products and standards.

There are a number of capacities required of both public and private sectors to the detriment of resource-deficient developing countries and or exporters. Countries may opt for selectivity and priorities have to be defined based on risks of human and agricultural health hazards and potential export revenue; measures are to be evaluated with an assessment of costs and benefits. With regard to export requirements, exporting countries may choose either to undertake measures to comply, bring complaints to the SPS Committee of the WTO or divert exports to less-demanding markets that are, perhaps, less remunerative as well. Committed participation is required not only from the private sector but from the public sector as well. The national government generally promotes export expansion by providing a macroeconomic environment conducive to trade but with standards and technical regulations, the public sector has a more involved participation. Collaboration between the public and private sector is important.

With standards and technical regulations evolving, it behooves a country to adopt a proactive approach in SPS management that allows policymakers to respond promptly and efficiently to problems, and not simply reacting to crisis in human or agricultural health or export restrictions.

As seen in the cases of Kenya horticulture and Tanzania Nile perch, albeit only for a single industry, compliance to these standards can be achieved and be turned into a competitive advantage. In these cases and other success stories, standards provided an impetus for the exporters for the modernization of facilities and adoption of hygienic practices. They raise their own criteria of quality and safety levels with the aim of entering the highly remunerative markets. Still, compliance is not the sole determinant of success in exports. There are complementary factors, the absence or weakness of which will nullify compliance investments and efforts—physical infrastructures, public institutions or the more fundamental production inefficiencies. The resolution of these constraints through coordinated public and private efforts will create a new competitive advantage for the export industry.

References

- Ackah, C. and O. Morrissey. 2005. "Trade Policy and Performance in Sub-Saharan Africa since the 1980s". Economic Working Paper No. 78. The African Development Bank.
- Aldaz-Carroll, E., F. Yagci and L. Hinkle. 2004. "Salient Features of Trade Performance in Eastern and Southern Africa". Africa Region Working Paper Series No. 76. The World Bank. Washington, D.C.
- Chen, M.X., T. Otsuki and J. Wilson. 2006. "Do Standards Matter for Success?" World Bank Research Working Paper 3809. The World Bank. Washington, D.C.
- CTA (*Centre Technique de Coopération Agricole et Rurale ACP-EU*, or Technical Centre for Agricultural and Rural Cooperation ACP-EU). 2003. "Study of the Consequences of the Application of Sanitary and Phytosanitary (SPS) Measures on ACP Countries. CTA.
- Danielou, M. and C., Ravry. 2005. "The Rise of Ghana's Pineapple Industry: From Successful Takeoff to Sustainable Expansion." Africa Region Working Paper Series No. 93. The World Bank. Washington, D.C.
- Dolan, C. and J. Humphrey. 2004. "Changing Governance Patterns in the Trade in Fresh Vegetables between Africa and the United Kingdom." *Environment and Planning*, 36(3): 491 - 509.
- Dolan, C. and K. Sorby. 2003. "Gender and Employment in High-Value Agriculture Industries." ARD Working Paper 7. The World Bank. Washington, D.C.
- FAO. 2004. *The Market for Non-traditional Agricultural Exports*. FAO Commodities and Trade Technical Paper 3. FAO. Rome.
- Henson, S., A. Brouder, W. Mitullah. 2000 " Food Safety Requirements and Food Exports from Developing Countries: The Case of Fish Exports from Kenya to the European Union". *American Journal of Agricultural Economics*, 82(5).
- Henson, S. and W. Mitullah. 2004. "Kenyan Exports of Nile Perch: The Impact of Food Safety Standards on an Export-Oriented Supply Chain". World Bank Policy Research Working Paper 3349. The World Bank. Washington, D.C.
- Jaffee, S. 2003. "From Challenge to Opportunity: Transforming Kenya's Fresh Vegetable Trade in the Context of Emerging Food Safety and Other Standards in Europe." ARD Discussion Paper 1. The World Bank. Washington, D.C.
- Jaffee, S. and S. Henson. 2004. "Standards and Agro-Food Exports from Developing Countries: Rebalancing the Debate." World Bank Policy Research Working Paper 3348. The World Bank. Washington, D.C.
- Labaste, P. (ed.). 2005. *The European Horticulture Market: Opportunities for Sub-Saharan African Exporters*. Working Paper No. 63. The World Bank. Washington, D.C.
- Maskus, K., T. Otsuki and J. Wilson. 2005. "The Cost of Compliance with Product Standards for Firms in Developing Countries: An Econometric Study." World Bank Policy Research Working Paper 3590. The World Bank. Washington, D.C.
- Mwaba, A. 2000. "Trade Liberalization and Growth: Policy Options for African Countries in a Global Economy". Economic Research Paper No. 60. The African Development Bank.

- Ng, F. and A. Yeats. 2000. "On the Recent Trade Performance of Sub-Saharan African Countries: Cause for Hope or More of the Same?" Africa Region Working Paper No. 7. The World Bank. Washington, D.C.
- _____. 2002. "What Can Africa Expect from its Traditional Exports?" Africa Region Working Paper Series No. 26. The World Bank. Washington, D.C.
- Ponte, S., J. Raakjær and L. Campling. 2007. "Swimming Upstream: Market Access for African Fish Exports in the Context of WTO and EU Negotiations and Regulation". *Development Policy Review*, 25(1):113-138.
- Rotherham, T. 2003. "Implementing Environmental, Health and Safety (EH&S) Standards, and Technical Regulations." International Institute for Sustainable Development.
- UN Millennium Project. 2005. *Trade for Development*. Task Force on Trade.
- UNCTAD. 2004. "Environmental Requirements and Market Access for Developing Countries." TD/(XI)/BP/1. UNCTAD.
- UNIDO. 2005. *Industrial Development Report 2005. Capacity Building for Catching-up*. UNIDO. Vienna.
- Wilson, J. and V. Abiola (eds). 2003. *Standards and Global Trade: A Voice for Africa*. The World Bank. Washington, D.C.
- Wilson, J. and T. Otsuki. 2004. "Standards and Technical Regulations and Firms in Developing Countries: New Evidence from a World Bank Technical Barriers to Trade Survey". Draft. The World Bank. Washington, D.C.
- World Bank. 2005a. "Tanzania's Agro-food Trade and Emerging Sanitary and Phytosanitary (SPS) Standards: Toward a Strategic Approach and Action Plan." Contribution to the Tanzania Diagnostic Trade Integration Study. The World Bank. Washington, D.C.
- _____. 2005b. "The Role of Standards under Kenya's Export Strategy". Contribution to the Kenya Diagnostic Trade and Integration Study. The World Bank. Washington, D.C.
- _____. 2005c. "A Review of Ghana and Senegal's Response to Public and Private Food Safety and Quality Regulations and Standards and the Impact on Smallholders." The World Bank. Washington, D.C.
- _____. 2005d. *Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Country Exports*. Report No. 31207. The World Bank. Washington, D.C.
- _____. 2006a. "Uganda, Standards and Trade: Experience, Capacities, and Priorities." Contribution to the Uganda Diagnostic Trade Integration Study. The World Bank. Washington, D.C.
- _____. 2006b. "Zambia: SPS Management." Recommendations of a Joint World Bank/USAID Assessment Team. The World Bank. Washington, D.C.
- _____. 2007. "Lao People's Democratic Republic, Sanitary and Phytosanitary Standards (SPS) Management: Action Plan for Capacity Building." The World Bank. Washington, D.C.