



Innovation
Knowledge
Development

THE ROLE OF STANDARDS IN GLOBAL VALUE CHAINS

IKD Working Paper No. 57

June 2010

Raphael Kaplinsky

Contacts for correspondence:

Raphael Kaplinsky, Development Policy and Practice, The Open University
R.Kaplinsky@open.ac.uk

Acknowledgements:

This paper—a product of the World Bank's International Trade Department, Poverty Reduction and Economic Management Network—is part of a larger effort in the department to understand the determinants of trade competitiveness and its implications for growth in developing countries. This work is aligned with the project —Export Competitiveness Diagnostic,□ which is supported by the governments of Finland, Norway, Sweden and the United Kingdom through the Multidonor Trust Fund for Trade and Development.

www.open.ac.uk/ikd/publications/working-papers

THE ROLE OF STANDARDS IN GLOBAL VALUE CHAINS

Raphael Kaplinsky

Development Policy and Practice

The Open University

Milton Keynes MK7 6AA

R.Kaplinsky@open.ac.uk

June 2010

This paper—a product of the World Bank’s International Trade Department, Poverty Reduction and Economic Management Network—is part of a larger effort in the department to understand the determinants of trade competitiveness and its implications for growth in developing countries. This work is aligned with the project “Export Competitiveness Diagnostic,” which is supported by the governments of Finland, Norway, Sweden and the United Kingdom through the Multidonor Trust Fund for Trade and Development.

ABSTRACT

Standards have become an increasingly important dimension in global trade. Without the capacity to meet the growing body of standards, producers may either have difficulty in entering global markets, or may be relegated to unprofitable and low-margin niches. This paper overviews the history of standards, explains the difference between different types of standards and identifies the key stakeholders involved in the setting of standards. It then addresses the role which standards play in enterprise upgrading and considers some of the major costs for producers in meeting standards, including potential cost barriers for small scale producers. Before concluding with a discussion of the policy challenges raised by these developments it discusses the extent to which standards intensity in global value chains will be affected when the final markets increasingly move from high-income consumers in the North to lower income consumers in Southern economies such as China and India.

Keywords: Standards, Innovation, Upgrading, Global Value Chains, Fairtrade

GLOBAL VALUE CHAINS DRIVE GLOBAL GROWTH

In recent decades the extension of global value chains has played an important role in the growth experiences of many sectors, economies and regions (Gereffi et al, 2005). Producing new products, at larger scale and meeting the requirements of distant demanding customers has allowed, and in some cases forced, producers to upgrade their capabilities and to apply these capabilities effectively to their business operations (Kaplinsky and Morris, 2001). In some cases, producers have participated in global markets by supplying final or intermediate products based on deep value added. This has predominantly occurred in the resource-based sectors and here producers have upgraded by adding greater value to what they were previously doing, and making their operations more efficient. But, more often, participation in global value chains has involved producers in the part-processing of intermediate products and the assembly of final products utilising largely imported intermediates and capital goods, and often involving thin levels of value added.

Increasingly, whether producing “whole” or “fragmented” products for global markets, producers have become subject to a variety of standards. In this paper we outline the key features of this standards agenda by analyzing the following questions: Why are standards important? How have standards evolved over time? What are the major different types of standards? Who are the major actors setting standards? What role do standards play in enterprise upgrading? What are the costs of meeting standards? How are standards affected by the markets in which goods and services are being sold? And, what are the major policy implications if governments and other actors are to assist producers to gainfully participate in global markets?

WHY ARE STANDARDS IMPORTANT IN GLOBAL VALUE CHAINS?

The deepening of globalisation after the Second World War was facilitated by the systematic reduction in trade barriers. Despite the continued existence of preferential trade schemes which favour particular groups of countries (for example, least developed country exporters to high income countries, or regional trade partners), there has been a widespread and systematic tendency for trade-quotas to be eliminated and for trade-tariffs to be simplified and lowered. However, at the same time as these trade barriers have been reduced, a new family of barriers have been introduced to govern world trade - a growing family of standards over products and processes. The ability to meet these standards is both a threat for producers (excluding them from profitable markets) and an opportunity (providing the potential to enter high-margin markets). The response of producers to the standards-challenge will have important implications for making the most of the opportunities offered by globalization.

Standards as a barrier to trade

There are three distinctive and related characteristics of standards as a barrier to global trade:

1. Unlike tariffs and quotas, they are not just established by governments, but also involve a range of private actors.
2. Unlike tariffs and quotas which are publicly codified, many standards are opaque. The rules and regulations which producers have to meet are often neither widely publicised or stable and consistent.
3. Unlike tariffs and quotas where there are established mechanisms to resolve conflicts (for example, the dispute resolution procedures under the WTO), the determination of performance with respect to standards is generally an asymmetric process, determined solely by the buying party or country, with the producer having little capacity to challenge decisions on conformance.

The importance of standards to low income countries

There are consequently five major reasons why standards have become important for low income country producers participating in global markets:

1. Standards have become a major determinant of *market access*, particularly in high income markets
2. Many *high-margin market segments* are defined by product and process standards (for example, organic foods) (Jaffee, 2003; Humphrey and Memedovic, 2006)
3. In developing the capacity to achieve standards, many producers develop *capabilities* which enhance their efficiency and their capacity to systematically increased productivity
4. Meeting standards is generally a costly process, and this can act as a *barrier to entry* for small scale and informal producers.
5. Many standards require coordinated actions along the *value chain*, and this systemic performance may be difficult to achieve.

Each of these five issues have important policy consequences, and will be discussed in more detail below.

A SHORT HISTORY OF STANDARDS

We can distinguish three families of standards involved in the historical development of standards governing production and trade – those set in the private sector, those emanating from the state sector, and those arising out of civil society initiatives.

Private sector standards

The origin of modern standards can be traced to the latter half of the 19th Century. During the American Civil War, soldiers found it difficult to

“cannibalise” damaged rifles. That is, although all of the rifles were produced to a common design, the stock of one rifle did not always fit the barrel of another. Similarly, when the first large volume cars were introduced in the early 20th Century, the gearbox of one car did not necessarily fit into another car of the same manufacture. This led to the development of what came to be called “*The American System of Manufacture*”, that is the development of systematic procedures for calibration, enabling the standardisation of component production (Hounsell, 1984). This process of standardisation was a core and necessary building block in the growing division of labour and the rolling out of mass-production which underwrote industrial growth for much of the twentieth century, and set the scene for the further development of process standards towards the end of the 20th Century.

A second important development in the private sector’s use of standards occurred during the 1970s. Its origins were to be found in the Japanese auto industry (Cusumano, 1985). Modelled on the “Toyota Production System”, this standards-intensive organisational paradigm diffused widely across the manufacturing and service sectors after the mid 1980s, and has come to be called “*just-in-time production*” or “lean production”. The key development here was the demise of mass production’s standardised product (in Henry Ford’s famous phrase, “you could have a Model T Ford in any colour as long as it is black”). Customers increasingly sought more differentiated and higher quality products. Toyota discovered that this could only be achieved at a low cost by the development of flexible manufacturing organisation which required low inventories and quality-at-source zero-defect components. Equally important, Toyota developed an organisational system which allowed for these new manufacturing procedures to be achieved throughout its supply chain, including first-, second- and third-tier suppliers. This allowed Toyota to specialise in its core competences and to outsource non-core components to its suppliers. Each of these suppliers was required to meet Toyota-determined standards on maximum levels of defects, on frequency and size of deliveries, and on other demanding “key performance indicators (KPIs)” which suppliers had to achieve. These are loosely summed up as Q-C-D, that is “quality, cost and delivery” standards.

The Toyota Production System tasked the firm, and its first tier suppliers to work actively with their suppliers to upgrade their production operations. This had two costs for these lead firms. First, the investments in supply chain management and upgrading (a set of standards-intensive procedures) required resources, and imposed a pecuniary cost of their operations. Second, it required the development of long-term relationships with suppliers. Moreover, they also required a stable political and social environment allowing for predictability in the management of logistics along the chain (for example, good infrastructure and an absence of strikes).

Whilst these long-term high-trust relationships had many positive sides, some lead-firms in some global value chains (particularly US-based electronic companies) viewed this as a high-cost outcome. They preferred to develop more arms-length relationships with competing suppliers, and for this to be effective, it would be necessary for suppliers to meet clearly defined

specifications. Therefore, from the 1990s, and beginning in the electronics sector, there was a third round of standards-setting in the private sector, allowing for the “modularisation” of production as supplier-firms (predominantly located in East Asia) competed to supply components to agreed industry-defined technical specifications (Sturgeon, 2002).

We can thus observe two contrasting paths of value chain standards in corporate-driven value chains. One involves close and high-trust relations along the chain, with cost-reduction an outcome of largely cooperative efforts between lead-buyers and their tiers of suppliers. The second involves the use of standards to promote much more conflictive, arms-length relations along the chain.

State-sector standards

Coterminous with the development of these post-war private sector standards governing participation in lead-firms’ value chains, there was the development of *state-imposed standards over health and safety*. As per capita incomes grew in northern economies, so governments became increasingly aware of the need to protect consumers against hazardous materials, components and products. In most cases this involved legislation initially aimed at domestic producers feeding into domestic markets, but as value chains became increasingly global in nature, these health and safety standards were extended to intermediate and final products traded over national boundaries.

Civil society sector standards

A third family of standards also reflected this confluence of the growth of higher incomes in major consuming markets and the globalisation of value chains. As northern economies grew in wealth, so *civil society organisations grew in importance*. They began to focus on the ethical and environmental character of the products which they were consuming (<http://www.capturingthegains.org/>). Under what conditions was labour employed? What was the impact on the environment? Were these products safe to consume?

DIFFERENT TYPES OF STANDARDS

Two major families of standards emerged from this historically evolving process of standards-setting – product and process standards (Kaplinsky and Morris, 2001; Nadvi and Waltring, 2004; Gibbon and Ponte, 2005).

Product standards

Product standards address the characteristics of the output from production. They are relatively unambiguous, and are defined by the quality requirements defined by particular standards-setters. For example, in the case of standards set by lead-firms seeking to reduce costs and increase flexibility, this may involve the definition of minimum levels of permitted defects. Thus, in the auto sector, permissible levels of defects which suppliers must achieve have been progressively reduced from 10,000 parts per million to less than 400 parts per million. In the food-retailing sector, the product standards which are tested will

include pesticide residues. In a relatively new development, Walmart is increasingly focusing on green-standards, including on the carbon content of products which it sources from its supply chain. In general, these product standards are unambiguous and require single-point verification at the end of the production process.

Process standards

Process-standards are more complex and more varied than product standards.

1. They are more complex because they typically involve the documentation of *procedures* involved throughout the production process rather than measuring a single outcome (as in the case of a product). For example, the International Standards Organisation (ISO) quality and environment standards (respectively the ISO9000 and ISO14000 series) require the documentation of practices and outcomes at various stages of the production process. Unlike product standards, they do not set the levels which must be achieved, but only require that these levels be checked and documented.
2. They are more *varied* because in some cases they include both the documentation of procedures and the achievement of clearly defined and measured outcomes. This may involve Key Performance Indicators such as the level of the minimum wage, the age of workers and the rights of workers to engage in collective bargaining, as well as the introduction of processes to minimise hazardous work practices.
3. They are more systemic than product standards because they typically involve the documentation and/or achievement of standards *throughout the chain*. For example, the Forestry Stewardship Council (FSC) certification which addresses sustainability in the timber and wood products value chain involves a chain of custody which follows the timber from its forestry cultivation, through the sawmills, the manufacture of processed wood, and in transformation into furniture and other final products. A similar process of verification is required throughout the chain if producers are to meet the demanding pesticide-residue requirements of global retailers, who demand that a defaulting shipment can be traced back all the way to the individual plot of land in which a particular leaf in a salad was grown.

The interaction between process and product standards

Thus, although conceptually distinct, it is not always possible to separate out product from process standards. For example, is organic food a product standard (whose characteristics can be measured), or a process standard (the documentation throughout the chain that inorganic materials are not entering the chain)? In most cases, therefore, particular product standard outcomes require the application of particular process standards. But the obverse is not always the case, that is, given process standards do not necessarily produce the targeted product standards. For example, the ISO quality and environmental standards only specify that pertinent information is

systematically collected which will make it easier to achieve given product standards. But it is entirely possible – and indeed often the case – that producers have achieved the required process certification, but that this is not used systematically to improve quality and environmental performance.

MAJOR ACTORS IN THE SETTING OF STANDARDS

Four major sets of actors are involved in the setting of standards – private sector actors, governments, civil society organisations and international industry bodies.

Private sector standard-setters

In the private sector, individual lead-firms have developed standards to determine the efficiency of their value chain operations. Initially these corporate standards largely defined the nature of the product. They were initially generally unique to the firm. But in some cases, firms began to co-operate to widen the pool of suppliers on which they could draw (Box 1). The concept of “efficiency” also began to widen during the latter decades of the 20th Century. In addition to focusing on flexibility, inventories, quality and cost and focusing on product standards, lead-firms have increasingly also needed to respond to civil society pressures on labour standards and the environment (Box 2).

Box 1: Evolving supplier standards in the auto industry

The dominant standard in the auto industry’s quality standard is ISO-TS16949. This is an auto-specific standard administered by the ISO, but developed with a sub-committee of OICA (the international vehicle assembly association). It has replaced QS-9000 (the American standard), and VDA-6 (the German standard, previously widely used in Europe), as well as ISO9001/2 (designed generically for all industries). Certain assemblers have additional quality achievement levels based on their suppliers’ actual quality performance. For example, Ford has Q1, identifying suppliers who have not had any returns for a period of time and who have passed Ford’s annual audit with a clean record. Toyota requires ISO accreditations: ISO14001 and ISO-TS16949, but has detailed firm-specific standards on which it rewards (and punishes) suppliers.

Source: Justin Barnes, Benchmarking Analysts, personal communication

Box 2: The Electronics industry responds to civil society demands for better work practices

“In January 2004, the release of a report by the Catholic Agency for Overseas Development “Clean Up Your Computer: Working Conditions in the Electronics Sector” shook and shocked the industry... based on interviews with workers in Mexico, Thailand and China in factories outsourced by IBM, HP and Dell. It revealed unsafe and hazardous working environments and many other worrying labour conditions. The campaign led many brand name firms, with HP as one of the leaders, and contract manufacturers in North America to come together and create the Electronics Industry Citizenship Coalition in 2004. There are forty members in the Coalition today that includes all the major contract manufacturers.

In 2004, the coalition created an industry wide standard, called the Electronic Industry Code of Conduct (EICC), based on the HP Supply Chain Social and Environmental Responsibility Code of Conduct, to replace company-specific codes. Its aim was to ease the ability of subcontracted firms and suppliers to comply with a vast amount of diverse customer requirements and standards by harmonising them into one approach for the industry. The key tool of the EICC is a self assessment questionnaire (SAQ), which was based on questionnaires created by brand name firms like HP and others. The answers to the SAQ can be posted on an on-line database, E-TASC, where all members can access and assess for themselves the compliance of suppliers. These tools come at a high cost. The subscription fee per supplier site is 500 USD and an additional 15,000 USD for use of the whole SAQ tool. The EICC also reviews and certifies third party auditors.

Source: Reichert, 2010.

Governments as standard-setters

Governments increasingly set standards governing the traded goods sectors. Unlike corporate sector standards where suppliers can perform at differential levels (and where suppliers may be rewarded or punished for over- or under-performance) these legislated standards are mandatory, transparent and provide little leeway to producers. Government standards can also vary in their sectoral purview. For example the USA mandates Hazard Analysis and Critical Control Point (HACCP) certification (which requires processes to reduce the risk of contamination in food production) for imports of juice and meat, but for other foodstuffs conformance is voluntary. With growing international cooperation, particularly in Europe, many legislated standards are no longer set by individual governments, but by groups of governments, as in the case of standards set by the European Union Commission. For example, the EU has adopted a suite of standards governing the “farm-to-table” chain, targeting a series of linked product and process standards governing food safety, animal health, animal welfare and plant health. These cover both domestic firms selling into the EU and exporters to the EU.

Civil society organisations as standards-setters

A third set of standard setters are civil society organisations. Unlike either the standards which pertain in corporate-governed value chains and those standards set by national and international governmental bodies, civil society standards are voluntary. However, this does not make these standards less important, particularly if producers are seeking to sell into higher-margin niche markets. Many of these standards fall under the Fairtrade umbrella, covering items such as foodstuffs (for example, coffee where the emphasis is on ensuring minimum incomes for producers), intermediate products (such as organic cotton and FSC timber, covering environmental issues) and final consumer goods (such as apparel, addressing labour standards). Although still a small segment of the global market for these items, the pressures leading to the adoption of Fairtrade-type certification are forcing many value chains to adopt their own, or other analogous standards in their value chains. One example of this is Starbucks which has adopted a non-Fairtrade scheme to regulate its supply chain (The Rainforest Alliance). Unlike Fairtrade which explicitly targets minimum prices paid to farmers and other socio-economic standards (Box 3), the Rainforest Scheme focuses on environmental and sustainability issues. Similarly, Walmart which, under pressure which it has tried to resist on labour standards, has struck-out against criticism by pushing through a series of greening standards to its supply chain, involving 2nd and 3rd tier suppliers (with chain-of-custody type accreditation) as well as 1st tier suppliers.

One of the major difficulties with the standards driven by civil society organisations is that there are a plethora of confusing and overlapping standards which confront producers. This arises as a direct consequence of the multiplicity of civil society organisations which are involved. Thus, in the apparel industry, many producers in low income economies are involved in a costly and often bewildering process of multiple audits of their labour standards as each of the lead-buyers bows to pressures from particular civil-society organisations in their different final markets. Hence in some cases large global branding firms have approached neutral bodies like the International Labour Organisation to develop a single globally-recognised and transparent labour standard which they can apply to their value chains and meet the demands of civil society organisations across their final markets.

Box 3: Fairtrade Certification

“Fairtrade standards are not simply a set of minimum standards for socially responsible production and trade. The Fairtrade standards go further in seeking to support the development of disadvantaged and marginalized small-scale farmers and plantation workers. Fairtrade standards relate to three areas of sustainable development: social development, economic development and environmental development.

In summary the key objectives of the standards are to:

- ensure a guaranteed Fairtrade minimum price which is agreed with producers
- provide an additional Fairtrade premium which can be invested in projects that enhance social, economic and environmental development
- enable pre-financing for producers who require it
- emphasize the idea of partnership between trade partners
- facilitate mutually beneficial long-term trading relationships
- set clear minimum and progressive criteria to ensure that the conditions for the production and trade of a product are socially and economically fair and environmentally responsible.”

Source:

http://www.Fairtrade.org.uk/what_is_Fairtrade/Fairtrade_certification_and_the_Fairtrade_mark/Fairtrade_standards.aspx, accessed June 24th 2010.

Industry standard-setters

International industry bodies represent a fourth category of standard-setters. More generally these are industry-specific organisations, often with their roots in national industry bodies. For example, the ISO9000 quality standards grew out the UK British Standards BS5750 certification scheme to address an international audience of participating firms. ISO standards generally cover a range of sectors, since they target internal processes; hence ISO9000 certification has been adopted in manufacturing as well as services and marketing companies. In other cases, these international standards-setting bodies are industry-specific. For example, the International Maritime Organisation (IMO) has grown into the major body regulating practices and safety in the shipping industry. Its explicit purpose is both to safeguard transport and to prevent “unfair competition” from low-cost and less scrupulous shipping lines. In cooperation with governments and civil society organisations, this has resulted in a series of standards, such of which have been enacted into law by most governments, and others which are considered to be beneficial and which are advisory (Box 4).

Box 4: Standards setting in the International Maritime Agency

Nine International Maritime Organisation sub-committees set standards governing different areas of shipping. These cover:

- Safety of Navigation (NAV),
- Radio Communication and Search and Rescue (COMSAR),
- Training and Watch-keeping (STW),
- Carriage of Dangerous Goods, Solid Cargoes and Containers (DSCC),
- Ship Design and Equipment (DE),
- Fire Protection (FP),
- Stability and Load Lines and Fishing Vessel Safety (SLF),
- Flag State Implementation (FSI), and
- Bulk Liquids and Gases (BLG).

Thirty-six Inter-Governmental Organizations including the EC (Commission of the European Communities), Helsinki Commission (The Baltic Marine Environment Protection Commission), Commonwealth Secretariat and INMARSAT have concluded agreements of co-operation with the IMO. Sixty-three Non-Governmental Organizations hold consultative status with the IMO.

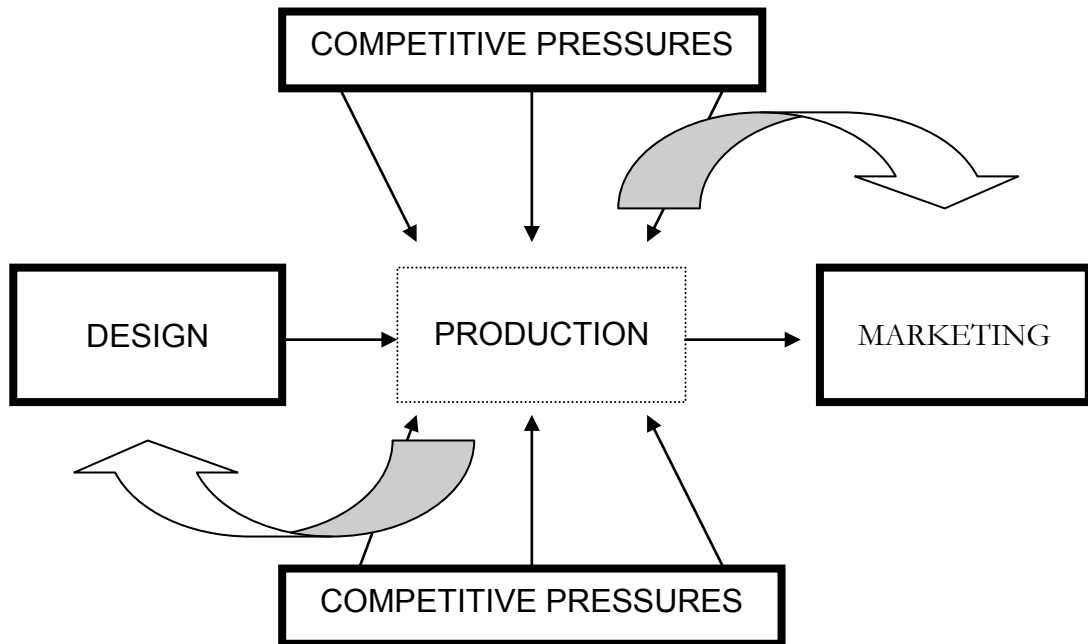
Source: http://www.balticmaster.org/media/files/general_files_693.pdf, accessed June 24th 2010.

THE ROLE OF STANDARDS IN ENTERPRISE UPGRADING

Different dimensions of upgrading

Classically upgrading at the enterprise level has been seen in terms of the improvement in *production processes* (arising from a combination of new procedures and applying new technologies) and in *products* (new products, improved products, more differentiated products and higher quality products). However, the increasing expansion of global value chains has added two new dimensions to our understanding of upgrading (Humphrey and Schmitz, 2001). These arise because of the competitive pressures in the global economy which have led to the widespread global diffusion of capabilities in manufacturing. This has resulted in lead-firms governing global value chains to introduce standards to ensure enhanced product quality and flexibility as lead firms outsource those parts of the production cycle which are easy to undertake. The first of these two additional categories of upgrading is *functional upgrading*, in which firms change their position in the chain, moving from areas of high competition (as in manufacturing) into areas of low competition (for example, branding, logistics and marketing (Figure 1)). The second additional form of upgrading is moving to *new chains*, as in the case of Illy Coffee whose past competences were in tin manufacture, but which now specialises in high-quality coffee, coffee-making machines and coffee bars (Fitter and Kaplinsky, 2004).

Figure 1: Functional upgrading in Global Value Chains



What role do standards play in this more complex picture of upgrading? In many cases, firms adopting the various sets of standards required to participate in global value chains have experienced considerable improvements in both process and product upgrading. Meeting the needs of demanding corporate chain leaders to enhance Q-C-D (Quality, Cost, Delivery) has invariably meant that firms have had to change their practices on inventories (reducing working capital costs), to restructure their plant layouts, to move from quality-at-the-end of the line to quality-at-source and to introduce new equipment which boosts productivity and enhances product quality (Womack and Jones, 1996). Similarly, firms participating in global value chains which require conformance to civil-society driven standards on health, safety, work-practices and the environment are generally able to participate in high-margin niche markets. Perhaps most importantly, without responding to these demands for higher process and product standards, firms risk being excluded altogether from global value chains.

There is an important caveat here, however, since as we saw in the case of ISO Standards, the adoption of process standards may provide the capability to enhance productivity and reduce costs, but this capability may or may not be utilised to achieve these ends. Firms may be able to monitor quality performance at each stage of the production cycle through the use of ISO9000 procedures, but unless these performance indicators are actually used to “stretch” efficiency – through setting and meeting a series of targets for systematic improvement – the achievement of standards accreditation will have little impact on the firms capacity to upgrade.

There is little indication that the adoption of either process or product standards has had a significant impact on the capacity of firms to either engage in functional or inter-chain upgrading. These require entirely different strategic and technical capabilities. Moreover, it is this capability to upgrade functionally and into new chains which provides the capacity for sustained income growth over time in many value chains. Hence, whilst standards clearly have an important role to play in stretching process capabilities and some product capabilities in firms inserted in global value chains, too much expectation should not be placed on their capacity to assist the core strategic upgrading which affects long-term survival and sustainable incomes. The upgrading challenge is a much wider challenge than responding to demands for the introduction of new standards.

THE COSTS OF IMPLEMENTING STANDARDS

Even though there may be a payback to the firm in effectively implementing standards arising from higher product prices, lower costs and larger volumes (due to selling to large-scale buyers), the achievement of standards will not be costless. The financial costs of accreditation itself may be low, but there will be resource costs in acquiring, and then maintaining accreditation – managerial time, training, new procedures and new equipment. Moreover, there may also be significant “lock-in costs” when suppliers invest heavily in meeting the specific standards of a particular firm (as in traceability in horticulture, where different retail firms have different types of paper-trails), and may find it costly to make the switch to a different lead-buyer’s standards procedures.

These costs will necessarily vary across industries. Achieving the standards required to sell into the defence sector will obviously be orders of magnitude more costly than those involved in the certification of organic coffee. Examples in the variation of costs show the degree of inter-industry variance:

- In the Gabonese timber industry, one large forest holding reported the cost of acquiring initial FSC certification (which requires action through the chain of production) at €4m, with an annual cost of maintaining accreditation of around €100,000. A second Gabonese firm estimated its environmental compliance cost at €2.10 per hectare, in the context of an estimated minimum economic forest-holding of 50,000 hectares. A third large forest-holding company estimated the cost of achieving the CFAD (Sustainable Forest Management accreditation) to be in excess of €1.5m. (Information provided by A. Terheggen, personal communication)
- By comparison the costs of compliance to health and safety and the ISO14001 environmental standard in the Malaysian electronics industry was considerably lower. A large MNC estimated the annual costs of maintaining its ISO14001 certification and the international occupational health and safety management system standard (OHSAS 18001) certification to be around \$4,600. A second MNC

reported the cost of OHSAS certification to be \$278 p.a. Two second-tier suppliers estimated the costs of maintaining ISO14001 accreditation at between \$4,600 and \$9,275 p.a. Most of these cost estimates however are based on previous investments by the firms in setting in place the processes and procedures for certification and these relatively low cost-estimates only relate to the annual costs of maintaining registration. (Information provided by G. Reichert, personal communication)

The key issue in considering the costs of standards-accreditation is thus best seen in relation to the size and financial viability of the suppliers involved. Whilst these levels of expenditure may be affordable to MNCs or large locally-owned suppliers, they often act to exclude smaller scale suppliers. One reason for this exclusion is the financial cost. Hence in the Thai cassava value chain, a number of smaller plants have had to withdraw from exporting to the EU as the costs of achieving GMP and HACCP accreditation are too high. These firms reported that it was not just the cost of accreditation itself, but that HACCP implementation requires trained staff and the maintenance of records (Information provided by J. Tijaja, personal communication). A second reason why small scale – and especially informal sector – firms may be excluded from participating in global value chains is that they lack the capacity and culture to systematically record and store the information required to achieve and maintain standards accreditation.

Hence, because of a combination of acquisition costs, the costs of maintaining accreditation and the lack of the capabilities to implement and sustain accreditation, the advance of standards in global value chains unambiguously acts to exclude small scale and informal sector producers from many global markets

DIFFERENCES IN FINAL MARKETS

The history of the evolution of standards in global value chains shows that in various ways these have been driven by the characteristics of final markets. High-income consumers require high-quality and frequently differentiated products, for which they are prepared to pay a premium. This has led lead-firms in global value chains to introduce standards in their chains to ensure that they can meet these demands timeously and at low cost. High per-capita incomes and the associated revenue streams accruing to governments have led many northern states to progressively ratchet-up the product standards which they require suppliers to meet in order to ensure the healthy and safety of their citizens. And the growth of civil-society organisations in the context of high per capita incomes has resulted in the call for high ethical and environmental standards in the products imported into their economies.

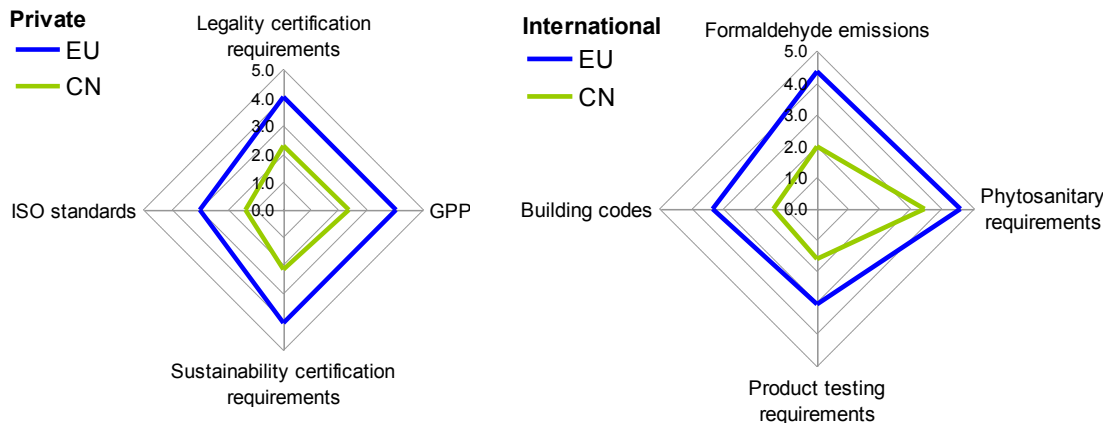
But what happens to the importance of standards when trade products are sold into low-income markets, where consumers lack the incomes to pay for differentiated and high quality products, where governments cannot afford to monitor and implement consumer safety standards and where civil society

organisations are either underdeveloped or their attention is not given to environmental issues or labour standards (Kaplinsky and Farooki, 2010)?

Emerging evidence – and it is only emerging evidence, since this is a relatively new phenomenon - suggests that in these circumstances, standards play a much less important role in global value chains. Two examples illustrate this – in both cases the contrast is drawn between the growth of exports to China at the cost of exports previously destined to the EU market (Kaplinsky, Terheggen and Tijaja, 2010):

- Thailand’s exporters of cassava pellets to the EU are required to meet two demanding sets of standards - GMP (Good Manufacturing Practice) covering sanitary and processing procedures, and HACCP (Hazard Analysis Critical Control Point) as cassava pellets are an input into animal feeds. By contrast, their exports of dried cassava to China are not subject to either GMP or HACCP certification, but only require a minimum level of starch-content (Tijaja, 2010).
- Gabonese timber exporters selling into the EU and China face very different markets in terms of standards (Terheggen, 2010). Entry into Europe is covered by much more intense standards, both private standards specified by global buyers, and mandatory standards set by governments and international bodies (Figure 2)

Figure 2: Corporate and state/Inter-state standards affecting timber exports from Gabon to the EU and China



Source: Kaplinsky, Terheggen and Tijaja, 2010

In both Thailand’s cassava industry and Gabon’s timber industry there has been a decisive shift in the final market over the past 15 years from the EU to China. Whilst producers who continue to sell into Europe remain subject to intensive standards in their global value chains, this is not the case when they export the same products to China.

POLICY IMPLICATIONS

Given the growing centrality of standards in global value chains, governments and international agencies providing support for producers seeking to enter the global economy in a manner which provides for sustainable income growth, need necessarily to engage with the challenge of promoting standards. This is however a complex challenge, and a suitably multi-pronged and nuanced response is required. Seven policy issues are raised:

1. Promoting awareness of standards

The review of the history of standards in global production and trade shows that standards have a long history. However, it also showed that recent decades have seen a rapid increase in the pace, in the variety and in the complexity of standards. It is incumbent on each government or supporting agency to ensure that the producers in their lead and emerging sectors are aware of the nature and changing portfolio of standards, and of the consequences of achieving or not achieving them as well as the steps which are required to achieve standards where this is a feasible and sensible objective. Awareness and knowledge are thus the cornerstones of a policy on standards and gainful participation in global value chains. Are governments aware whether their economies possess the certification bodies and capabilities required to gainfully meet global standards requirements? To what extent do their standards align with global standards, and does this matter?

2. Ensure that standards do not rule out local suppliers

In some sectors, lead firms specify standards have the unintended consequence of ruling out local suppliers. This is, for example, a common case in Africa's mining sector, where the mine-commissioning firms often specify the use of standards for items such as electrical fittings and piping which are used in their home market, but not in the local market. For instance, in Tanzania this has led to the exclusion of existing suppliers utilising UK rather than Australian specifications. Particularly in large infrastructural and mining contracts (where in both there is considerable potential for local linkages), governments need to be aware of the need for lead-contractors to utilise those standards which are in currency in the domestic economy.

3. Role of lead firms in promoting standards

In many sectors, a key driver of standards are the lead-firms in global value chains. There are, however, two contrasting outcomes of the standards imposed in corporate-driven value chains. The first is reflected in the contributions made to metal- and plastics-working suppliers by global auto-assemblers. Driven by the imperatives of lean production, auto assemblers have made it their business to upgrade their suppliers' performance through the systematic use of standards, setting a moving target of standards which suppliers need to meet. Attracting these firms as a way of upgrading their supply chains (which also feed into other value chains and hence have spread effects) has been a core and successful component of government industrial policy in high income and middle income countries alike (for example, the UK and South Africa). Less relevant to widespread capability-building have been corporate standard-setters who have been concerned to identify industry standards precisely to minimise their responsibilities to upgrade their supply

chain and to promote competition between suppliers. This is referred to as the use of standards to promote the modularisation of component supply.

4. Government must assist firms where lead firms do not

Where lead-firms do not engage in upgrading their supply chains, a key challenge for policy-makers is to ensure that a system of incentives is introduced to enhance both the demand for appropriate standards by firms wishing to participate gainfully in global value chains, and the capacity of local providers to supply support for local firms seeking to achieve accreditation. Support for the business services sector is a key component of this agenda. In some cases this may be provided by the relevant industry association. In other cases, specialised providers may address the needs of many industries, such as those offering to assist firms to introduce ISO9000 and ISO14000 standards.

5. Assisting small scale producers

Special problems arise for small firms, since achieving standards-accreditation may be a relatively costly process (the costs tend to be fixed, irrespective of scale, and thus adversely affect small producers). One way of reducing these scale economies is by a group of small producers banding together to share the costs of certification, both in its initial and then annual re-certification stages. But this will only diminish the disadvantage confronting small producers, not remove it. A strategic decision will then have to be made on whether there is no place for small producers in standards-intensive global value chains, or whether some form of subsidised scheme should be established to sustain their participation. This will require a country- and sector-specific set of judgements, balancing off distributional concerns and the upgrading benefits of standards against their fiscal and economic cost.

6. Targeting low income markets

There is growing evidence that the standards-agenda is to a large extent a function of market-characteristics, and in general low-income markets are less standards-intensive than are high-income markets. It follows from this that individual producers, or countries, may actively segment these markets. Some firms – perhaps small scale producers – and some production lines may be dedicated to the low-income markets, whilst others develop the standards' capabilities to participate in high-income markets. This is an agenda for firms and their industry-associations, and for governments engaged in industrial policy designed to maximise the gains from participating in the global economy.

7. Harmonising standards and developing countries participation in standards-setting bodies

Many developing country firms are confronted with a bewildering variety of standards which their producers have to meet, and at considerable cost. This is perhaps most evident with regard to labour standards, but it is not unique to labour standards. At the same time, some of the technical industry standards which are set reflect the operating conditions in high-income economies – predominantly temperate climates with pervasive and reliable infrastructure. In these and other cases, low income country governments need to participate

actively in standards-settings in those international fora which are relevant to producers in their local economy. Particularly for small economies, this may also best be undertaken through collaborative specialisation and through collective action.

REFERENCES

- Cusumano M. A. (1985), The Japanese Automobile Industry: Technology and Management at Nissan and Toyota, Cambridge, Mass.: Harvard University Press.
- Gereffi G., T. Sturgeon and J. Humphrey (2005), "The Governance of Global Value Chains", Review of International Political Economy, Vol. 12 No. 1., pp 78-104;
- Gibbon, P and S. Ponte (2005), Trading down: Africa, value chains and global capitalism, Philadelphia: Temple University Press;
- Hounsell, D. A. (1984), From the American System to Mass Production, 1800-1932, Baltimore: Johns Hopkins University Press.
http://asiandrivers.open.ac.uk/documents/Value_chain_Handbook_RKMM_Nov_2001.pdf
- Humphrey, J. and H. Schmitz, (2001), "Governance in Global Value Chains", in G. Gereffi and R. Kaplinsky (eds.), IDS Bulletin Special Issue on The Value of Value Chains, Vol. 32, No. 3, pp. 19-29.
- Humphrey, J. and O. Memedovic (2006), Global Value Chains in the Agrifood Sector, UNIDO Working Paper, Vienna: UNIDO;
- 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", Agriculture & Rural Development Discussion Paper 1, Washington: World Bank;
- Kaplinsky, R. and M. Morris (2001), A Handbook for Value Chain Research,
- Kaplinsky, R. and M. Z. Farooki (2010), "What are the Implications for Global Value Chains when the market shifts from the North to the South?", World Bank Policy Research Working Paper No. 5205, Washington DC: The World Bank.
- Kaplinsky, R. and R. Fitter (2004), "Technology and Globalisation: who gains when commodities are de-commodified?", International Journal of Technology and Globalization, Vol. 1, No. 1, pp. 1-28.
- Kaplinsky, R., A. Terheggen and J. P. Tijaja (2010), "What Happens when the Market Shifts to China? The Gabon Timber and the Thai Cassava Value Chains", World Bank Policy Research Working Paper No. 5206, Washington DC: The World Bank.
- Nadvi, K., and F. Waltring (2004), "Making Sense of Global Standards", in H. Schmitz (ed.), Local Enterprises in the Global Economy: Issues of Governance and Upgrading, Cheltenham: Edward Elgar;
- Nadvi, K. (2008), "Global standards, global governance and the organization of global value chains", Journal of Economic Geography, Vol. 8, No. 3, pp. 323-343
- Reichert, G. R. (2010), "Environmental Health Governance in the Personal Computer Global Value Chain", mimeo, Institute for Development Policy and Management, Manchester: Manchester University
- Sturgeon, T. (2002), "Modular production networks: a new American model of industrial organization", Industrial and Corporate Change, 11 (3): 451-496.
- Terheggen, A. (2010, forthcoming), "The New Kid in the Forest: The Impact of China's Resource Demand on Gabon's Tropical Timber Value Chain". PhD Dissertation, Milton Keynes: The Open University.

- Tijaja, J. P. (2010, forthcoming), "The Role of Exogenous Factors and Domestic Agency in Changing Market Conditions: Lessons from the Thai Cassava Value Chains", PhD Dissertation, Development Policy and Practice, Milton Keynes: The Open University.
- Womack, J. P. and D. T. Jones (1996), Lean Thinking: Banish Waste and Create Wealth in Your Corporation, N. York: Simon & Schuster

Figure 3 in black and white if you need it for printing.

