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Changing Agro-food Export Composition and SPS Compliance: Lessons for Mauritius

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Historically, agro-food exports from developing countries have been dominated by a few traditional commodities such as coffee, tea, sugar and cotton. This picture has considerably evolved recently, with sustained growth in high value (HV) agro-food exports such as fishery and horticultural products. Such a situation has had implications for developing countries in terms of compliance with sanitary and phytosanitary measures present in developed countries. This article hinges on a thorough literature review and secondary data analysis. Its objectives are to analyse how Mauritian agro-food exports have evolved over the last decade and to propose strategies for Mauritius to successfully comply with sanitary and phytosanitary requirements prevailing in developed-country markets so as to maintain and expand its agro-food exports. The main finding is that Mauritius experienced a similar growth of HV agro-food exports, with the emergence of seafood exports. Compliance strategies to aid the export of high value agro-food products to the EU are finally proposed.

Keywords: agro-food exports, high value, SPS compliance

1. Introduction

1.1 Evolution in Global Agro-food Exports

Trade is the "lifeblood of global economies" (DFID, 2011), boosting economic growth and reducing poverty. Expanding a country's trade by 10 percent can raise incomes by 5 percent (Feyrer, 2009), so there is now much emphasis in international development on promoting trade (Day, 2013). Until the early 1970s, a few agricultural commodities – like coffee, tea, cotton, tobacco, sugar and rubber – dominated the agro-food exports of developing countries, accounting for 55 to 65 percent of their total agricultural exports. Developing countries have gradually and substantially diversified their export base. In their analysis of the changing composition of developing-country agro-food trade, Jaffee and Sewadeh (2005) estimated that there has been a rapid expansion in higher value, non-traditional agro-food exports in many developing countries. Higher value (HV) agro-food or differentiated agricultural and food product exports include fresh and/or processed fruits and vegetables, meat products, fish and fishery products, nuts, spices and floricultural products. This growth is attributed to:

- a rise in incomes in developed countries,
- an increase in consumer health awareness,
- urbanisation patterns in industrialised and developing countries,
- globalisation of food chains and the increasing presence of multinational super- and hyper-markets in an increasing number of developed and developing countries.

Advances in production, transport/communication and other supply chain technologies, existence of a more trade-friendly environment at the international level and increased international investment in the food industry altogether have eased the expansion in the trade of HV agro-food exports and have led to a revamping of agricultural and food systems (Jaffee, 1993; Henson and Reardon, 2005; Fulponi, 2006; Nadvi and Waltring, 2003). In fact, international trade in HV agro-food products is one of the most dynamic and rapidly growing components of international agricultural trade (Davis, 2006).

In industrialised countries, consumers have shifted consumption towards higher value products, including fresh fruits and vegetables, fish, nuts and spices. This shift in consumption patterns has had tremendous implications for developing-country exports (Jaffee, Henson and Diaz Rios, 2011). Developing-country trade in high value products rose from US$26 billion in 1980/81 to US$106 billion in 2003/04 (Jaffee and Sewadeh, 2005), representing a 308 percent increase and 45 percent of the total agro-

food exports of developing countries in the latter years. Low-income countries that have emerged as major players in the international markets for high value products are shown in table 1.

Table 1 Major Low Income Countries Participating in International High Value Markets

Country	Example of high value products
Kenya	vegetables and cut flowers
Vietnam	fish and spices
Bangladesh	shrimp
Peru	asparagus
India	fresh and processed horticultural products, fish and spices

This development is more pronounced in some countries. For sub Saharan Africa, the aggregate average share of traditional exports – coffee, cocoa, tea and spices – out of total agro-food exports decreased from 49 percent during the period 1970–1979 to only 29 percent during the period 2000–2009, while the share of non-traditional exports (including fresh fruits and vegetables, fish, cut flowers, etc.) increased from 11 percent during the period 1970–1979 to 32 percent for the period 2000–2009 (Jaffee, Henson and Diaz Rios, 2011).

The changing composition of agro-food exports from developing countries is among the factors behind the increase in employment, incomes and micro-economic stability. At the same time, it has brought to light the fact that divergent food safety, plant and animal health standards (SPS measures) and divergent standards-management capacities exist and can be important trade determinants. The safety component now forms an integral part, together with price and basic quality, of the competitiveness bundle determinants. This increased demand for food safety is associated with structural and institutional transformation of agricultural and food markets (Kinsey, 2003) and a series of highly mediatised food scares.

This article hinges on a thorough literature review and secondary data analysis. Its objectives are to analyse the evolution in agro-food exports in Mauritius, a sub Saharan developing country, and to propose strategies for the country to successfully comply with sanitary and phytosanitary requirements prevailing in developed-country markets so as to maintain and expand its agro-food exports. The article is structured as follows: in section 2 we review the literature on the evolution in influence of global

SPS requirements in agro-food trade, the new trends in standards and regulations in the agro-food trade, the impact of SPS measures on developing countries and the literature on compliance strategy. While section 3 deals with the methodology, section 4 presents the findings with respect to the evolution in Mauritian agro-food exports. In the last section, we propose a compliance strategy for Mauritius to deal with the expansion of agro-food exports.

2. Review of Literature

2.1 Evolution in Influence of Global SPS Requirements in Agro-food Trade

The trade of traditional export commodities has been governed mainly by price competition, quality grades and certain forms of trade protection. Recently, however, the food safety criterion has also started to form part of the picture, e.g., pesticide residues in tea. In the "specialty" market segments for such commodities, other criteria apply, e.g., in the organic/fair trade market segment, the environmental and/or social factors of the production processes are also becoming important. The dominance of food safety, agricultural health and environmental measures in determining market access and competitiveness is being observed in the trade of "non-traditional" agro-food exports, over and above price and quality factors. One example is the cut flowers trade, where phytosanitary controls and the possible movement of plant pests from border to border are important factors. Another example is the fresh fruit and vegetables trade, where, in addition to the two factors mentioned for cut flowers, both the public and private sectors apply more stringent food safety product and process standards. Attention is also given to the safe use of pesticides and the presence of pesticide residues in the produce. For fish and fishery products, increasing focus is on the hygiene of fish landing sites and of fish processing facilities and on the regulatory control of fish safety, which is a source of concern for many developing-country suppliers (World Bank, 2005; Gebrehiwet, Ngqangweni and Kirsten, 2007).

2.2 New Trends in Standards and Regulations in the Agro-food Trade

Consumers are increasingly paying attention to food safety, quality and methods of production. Standards and regulations differ not only between developing countries and developed countries, but also among developed countries themselves (Unnevehr, 2003; Henson, 2004), and this difference often acts as a deterrent to trade. Differences in standards and regulations stem from not only the variations in tastes, diets, income levels and perceptions of risk by populations, but also from the differences in legal

and industry structures, available technical, scientific, administrative and financial resources and physical infrastructure. However, in tropical or subtropical climatic conditions, certain pests and diseases posing risks to human, animal and plant health may thrive, and so it is more demanding in these regions to produce food without the use of pesticides. Thus, even if the farmers use good agricultural practices (GAP), it is more exacting for them to meet the legal requirements imposed by developed countries with respect to pesticide residue limits.

All these factors combined pose a major challenge for developing countries, increasingly so given that standards for food safety and agricultural health are rapidly evolving. Consumers in developed countries have become increasingly aware and exigent with respect to food safety issues since their confidence in national food control systems has been shaken (Henson, 2006). As a response, governments have undertaken institutional and regulatory reforms and introduced tighter standards.

Three additional trends have been observed that can add to the globalisation of the food safety problem:

- there has been a globalisation of the agro-food chain;
- there is an increasing amount of food that is distributed by a few players;
- the flow of information on food safety is becoming more global.

Global agro-food systems increasingly concentrate on food safety and quality attributes, and this has served to highlight the importance of food standards and of setting the right environment for the organisation of supply chains (Henson, 2006). The private sector has also, in parallel, taken initiatives to promote the implementation of food safety measures. Therefore a number of private standards and codes of practice have been co-existing with public systems of ensuring food safety. The private sector's involvement in the supply chain has been motivated not only by the need to address food safety risks and consumer concerns and preferences, but also to mitigate reputational and/or commercial risks and as a strategy of differentiation (Garcia Martinez and Poole, 2004; Fulponi, 2006; Henson and Reardon, 2005). It is estimated that the number of private schemes amounts to 400 (WTO, 2007). The issue of private standards is discussed in detail in Liu (2009).

2.3 SPS Measures: Concern for Developing Countries?

The increase in and tightening of food and agricultural health standards is creating concern among developing countries. Not only can these standards be potentially used to discriminate against exports, but also their complexity and lack of harmonisation between countries could act as a barrier against developing countries. Another pessimistic view about standards is that developing countries lack the administrative, technical and scientific capacities to comply with emerging requirements. The investment and recurrent compliance costs could also marginalise the weaker players (World Bank, 2005). For instance, tightening of EU food safety regulations on aflatoxins could cost African producers about £500 million through non-export of groundnuts and cereals (Wilson and Otsuki, 2001). Some countries cannot even consider exports because they lack the necessary capacity to comply. For example, Tanzania has one of the largest cattle herds in Africa, but because of foot and mouth disease and other OIE-notifiable diseases, the country's meat exports are worth less than US$1 million a year. In contrast, Botswana has invested in capacity development and enjoyed meat exports worth $159 million in 2010 (Day, 2013).

Because of the increased use of regulations and conformity assessment procedures as commercial policy instruments in trade (Stephenson, 1997), the World Bank has launched a number of research projects oriented towards sanitary and phytosanitary issues (Wilson, 2000), aimed at increasing implementation of sanitary and phytosanitary regulations and standards in developing countries. One such recent project focuses on sub Saharan Africa (SSA) and centres on the following objectives:

- development of country-specific action plans (Kenya, Mozambique, Nigeria, South Africa and Uganda) to deal with international standards and regulations;
- identification of infrastructure and country needs in SSA;
- expanding access to international standards and regions' ability to implement WTO obligations.

Other countries may use over-exigent standards or keep on changing the standards so that process or product adaptations become economically unsustainable for the developing countries. Usually, the developed countries are the standard setters, and this may lead to information asymmetry so that the developing countries do not receive enough information on standards, or they may find the price of meeting those standards too prohibitive. Multinationals from developed countries implant themselves in developing countries to tap the cheap local labour and easily conform to

the standards and regulations imposed internationally, whereas the indigenous small and medium enterprises in the developing countries cannot.

Another school of thought supports the theory of *standards-as-catalyst* or the *competitiveness* view: certain developing countries can use, and are using, such opportunities to gain a competitive edge as, for instance, demonstrated by Thai and Kenyan horticulture, Thai and Nicaraguan shrimp, Indian spices, Mauritian fish (World Bank, 2005; Jaffee and Henson, 2004; Neeliah, Goburdhun and Neeliah, 2012; Neeliah, Neeliah and Goburdhun, 2013). The standards, in this case,

- act as a bridge between consumer requirements and the distant supplier,
- provide a common language within the supply chain, and promote consumer confidence.

Not only do the above contribute to the modernisation of the developing-country export supply chains and the management of food safety and agricultural health standards by government, they also have spill-over effects on the domestic food control systems to the benefit of the local population and domestic producers. By complying with requirements set by importers, developing countries get a number of benefits: compliance could enhance their capacity and provide them with a means of long-term sustainability and profitability in trade. Peterson et al. (2013) empirically assessed sanitary and phytosanitary regulations on 47 fresh fruit and vegetable product imports from 89 exporting countries over the period 1996–2008 and found that the actual restrictiveness of SPS measures diminishes dramatically as exporters accumulate experience and is not necessarily a deterrent to trade as they attain a certain threshold in managing the export of their agro-foods.

Boza (2013), through an analysis of recent research papers also concurs that the relationship between SPS/Technical Barriers to Trade (TBT) and food and agricultural international trade is characterised by a “dual” effect. On the one hand, the implementation of sanitary, phytosanitary and technical standards may increase consumer trust and, consequently, trade. On the other hand, the implementation of some requirements can also act as a barrier for exporters due to production costs. Compliance with food safety, agricultural health and social measures is an important determinant of the competitiveness of developing countries, especially in their trade with high-income industrial countries for horticultural, fish and meat products. To continue to form part of this global supply chain, developing countries will have to keep abreast of these developments and respond through appropriate commercial mechanisms and production practices.

2.4 Strategic and Tactical Options for Compliance

Drawing from Hirschman (1970), Henson and Jaffee (2008) present a novel conceptual framework to characterise alternative strategic responses to standards, that is, exit, compliance and voice (table 2). The proactivity/reactivity dimension shown in the table relates to the timing of the compliance effort.

Table 2 Strategic Responses to New Measures

Response	Reactive	Proactive
Exit	Wait for new measures and then give up	Anticipate new measures and leave particular markets
Loyalty/ Compliance	Wait for new measures and then comply	Anticipate new measures and comply ahead of time
Voice	Complain when new measures are applied	Participate in the elaboration of international standards or negotiate before standards are applied.

Source: World Bank, 2005

According to Henson and Jaffee (2008), developing countries face a number of strategic options when addressing food safety standards and regulations, namely, “exit”, “loyalty”, “voice”, “reactive” and “proactive”. The implicit single choice for most developing countries is compliance. One can comply when a standard comes into force (that is, reactively), or ahead of time (proactively) according to predictions about how standards are likely to evolve in the future. In pursuit of compliance a country might undertake options such as legal reform, change in institutional structures and responsibilities, supply chain restructuring and/or modification in production and processing technologies and in quality assurance systems.

Developing countries may also choose to “exit”, that is, leave the market, or switch customers in a case where compliance with a private standard is the requirement. Or they may choose to exercise “voice”, that is, participate in cross-notifications at the level of the SPS committee, complain or negotiate using the WTO dispute settlement process or participate in standard-setting. It is possible to further characterise the responses of developing countries to new measures with regard to the following:

- Defensive and offensive approaches: Defensive strategies are those targeted at maintaining the status quo and keeping the impact of change to a minimum and are often pursued in conditions of risk averseness and resource limitation, while offensive strategies involve attempts to use standards to gain

competitive advantage, even where this may entail additional investment beyond the minimum required to achieve compliance.

- Locus of efforts to attain compliance or exercise voice: Measures can be taken in the public or private sectors, involving either individual entities (for example, single firms, farms or agencies), or through various forms of collective action (table 3).

Table 3 Actors in Strategic Response to Standards

Actor	Individual	Collective
Public	Specific ministry or agency	Inter-ministerial task forces Government to government memoranda of understanding Multi-country SPS counter-notification
Public-Private	Subsidies, co-financing Joint ventures	Joint public-private sector task forces
Private	Firm and farm investments Company codes of practice	Trade and industry associations Grower associations Partnerships in coordinated supply chains

Source: World Bank, 2005

According to World Bank (2005), the most positive and likely to be advantageous approach combines voice, proactivity and an offensive strategy. This can lead to a competitive opportunity emerging from the challenges associated with new measures, thus yielding positive and economic spill-over.

Voice

Henson and Jaffee (2008) examined the strategic responses at two levels, namely how developing-country governments use international institutions to respond to proposed new food safety measures by trading partners, and how the public and private sectors react to develop market- and standard-specific responses to new food safety measures in established markets. According to Jaffee and Henson (2004), the number and nature of complaints and counter-notifications (specific trade concerns) made through the SPS Committee can be used as an indicator to depict the nature and breadth of the standards and regulations challenge for developing countries and the degree to which developing countries are able to demonstrate "voice" when new public food safety and other SPS standards are proposed by trading partners. The number of notifications

from developing-country members has steadily increased over the years, with a peak in 2009 (WTO, 2013). As of mid September 2012, the share of notifications submitted by developing-country members (including least-developed countries) reached 54 percent. Countries like Gambia and India have been able to comment on the EU's notification relating to new standards for aflatoxins. Unnevehr (2001) indicated that this was clear evidence of the agreement's usefulness to developing countries, as it triggered the revision of the standards by the EU.

Time is devoted to the consideration of specific trade concerns (counter-notifications) raised by members at the SPS Committee meetings since 1995, thus helping to avoid potential trade conflicts (OECD, 2003). In the 18 years between 1995 and the end of 2012, 344 specific trade concerns were raised (WTO, 2013). Developing-country members are relatively active regarding this agenda item in the SPS Committee meetings. Thus they prefer softer structures to resolve trade issues over the formal dispute settlement mechanism. Since 1995, developing-country members have raised 189 trade concerns (figure 1) compared to 212 raised by developed-country members and 5 raised by least-developed-country members.

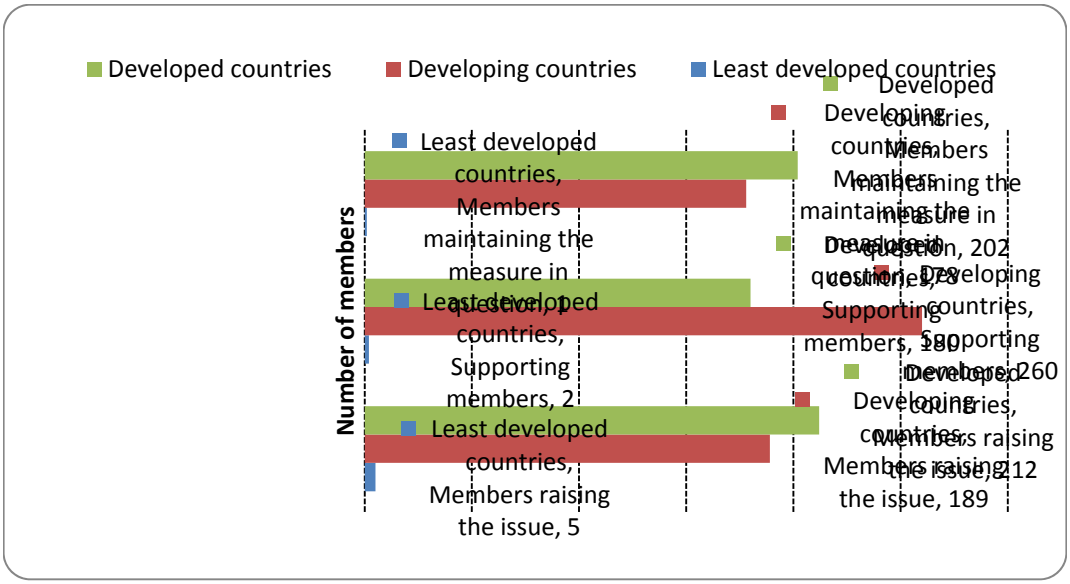

Figure 1 Specific trade concerns: participation by WTO members (1995–2009).

Source: WTO, 2013

Moreover, developing countries' complaints have been dominated by a small number of middle-income countries, notably Argentina, Brazil, Chile and Thailand. This reflects the dominance of certain countries in the trade of particular "sensitive" commodities (especially beef and horticultural products) and not the overall structure

of developing-country agricultural and food trade. Low-income countries are poorly represented in the pool of counter-notifications, issuing or supporting complaints in only five cases over the period 1995 to 2004. This highlights both the structure of their exports, which are concentrated in commodities for which food safety and other SPS measures are of lesser importance, as well as their limited capacity to participate in the SPS Committee (Jaffee and Henson, 2008).

According to an analysis by Josling, Roberts and Orden (2004), developed countries were most often the source as well as the target of specific trade concerns that identified food and feed regulations as unjustified trade impediments, indicating that some gaps remained in convergence around SPS regulatory principles and that developed countries failed to agree on an acceptable level of protection. Both developed and developing countries cited the measures of developed countries in the majority of trade concerns related to human health.

Mehta and George (2003) consider that an indicator of developing countries' participation in the SPS Agreement is their attendance rate in the meetings of SPS committees. Developing countries have a poor attendance rate (Mehta and George, 2003; OECD, 2003) that prevents them from effectively addressing their concerns to the SPS Committee. For instance, India does not make sufficient use of the SPS Committee to challenge specific SPS measures and discuss SPS-related issues (Das, 2008). Thus, while the number of notifications and counter-notifications is a useful indicator, it provides only a rough idea about the extent to which developing countries are able and willing to exhibit "voice", with a greater proportion of concerns and disputes being raised bilaterally. At the same time, however, it could also indicate that developing countries lack the capacity to negotiate when new food safety standards are applied.

Further, the avenue of formal complaints through the WTO relates only to mandatory standards set by public bodies. There is a growing variety of private food safety standards. Concerns about the trade effects of private standards have been raised at the level of the WTO (Henson, 2008) since 2005. SPS Committee members are still divided over the issue of private food safety standards. The discussion has also focused on the extent to which private food safety standards are consistent with the SPS Agreement (Henson and Humphrey, 2009), with most of the protagonists arguing the contrary. Henson (2008) and Hobbs (2010) consider that the WTO does not have any jurisdiction over private food safety standards. Others insist that it is still uncertain whether the SPS Agreement has any legal jurisdiction over private standardisation activities (Wouters, Marx and Hachez, 2008; Roberts, 2009). A major implication of this grey area is that private standards are still dominating the agro-food

trade. There are, however, no comparable ways to observe "voice" related to private standards.

Henson and Jaffee (2008) further elaborate on data on developing-country participation in international standards–setting organisations in the area of food safety, notably the Codex Alimentarius Commission. This provides some evidence of the degree to which low- and middle-income countries are able to exhibit "voice" at the international level through participation in international standards development. While most developing countries are members of Codex Alimentarius (Henson, Preibisch and Masakure, 2001), their participation in the Codex Alimentarius Commission, which ratifies new standards, remains limited. Further, very few developing countries are actively involved in the drafting of new standards. While some other developing countries (for example, Kenya and Egypt) have tried to enhance their participation, and the setting up of the Codex Trust Fund has improved the situation (Neeliah, Goburdhun and Neeliah, 2011), most attend meetings irregularly, at best.

Compliance

Another strategic option that is available to exporters is compliance. There are many examples of such responses in the literature. For instance, while certain African exporters have been "losers", other developing countries like China and Latin American countries upgraded their production and supply chains to comply with the stricter aflatoxin requirements imposed by the EU (Diaz Rios and Jaffee, 2008).

In both India and Kenya, the dominant strategies in response to emerging food safety standards in the fishery export sector were "reactive", and "compliance" by government and the private sector. Thus, hygiene and/or antibiotic controls were largely upgraded in response to regulatory change in the EU. In Kenya little action was taken until inspections by the European Commission, but in India the government had undertaken some reforms to its regulatory framework, although these were insufficient to comply with the EU's requirements. In both India and Kenya there were exporters that adopted enhanced food safety controls "proactively"; other exporters exited the industry in response to the imposition of stricter food safety controls; some withdrew from the business altogether, while other processors refocused towards markets with lower food safety standards. All firms appeared to have exited in a "reactive" manner (Jaffee and Henson, 2008).

The Indian fish processing sector complied on both an individual and collective basis. Many fish processing facilities made significant investments in order to upgrade their processing facilities and implement stricter hygiene controls "proactively". Others that had waited until being required to upgrade their operations by the Indian

government, exited from the sector. Many Indian processors also tried to spread their risks by diversifying their market base between the EU, the United States, Japan, China, the Middle East and Singapore, or they diversified their business and/or put greater emphasis on other commercial activities (Jaffee and Henson, 2008).

The reactions of the fish processing sector in Kenya to evolving hygiene requirements can be characterised as "reactive compliance" and "reactive exit". There is little or no evidence of "voice". The strategic options of all firms in the sector were limited by shortages in the supply of raw material and few possibilities for value-addition. The ability of exporters to exploit the potential benefits from more "proactive" strategies has been limited by the economic realities of the sector.

The Kenyan fresh produce export industry shifted in its commercial approach in response to – and in anticipation of – commercial, regulatory, and private governance changes within its core external markets, such as saturated markets for certain products, increased competition from other supplier countries, increased regulatory activity and emergence of private standards and supermarket chains. This led several Kenyan exporters to reorient their operations. They started experimenting with new crops, new consumer packaging and new combinations of vegetables, and with directing their products towards selected supermarket chains with strict requirements. This led to an improvement at the level of exporters: pack-houses were upgraded and food safety management systems were implemented. The ability of Kenyan exporters to meet stringent European public regulations and private standards has secured their position. Indeed, while they could not compete on a unit cost basis because of the distance of Kenya from Europe, they competed using SPS measures as a lifeline, among other marketing strategies (Jaffee and Henson, 2005; Henson and Jaffee, 2008).

3. Methodology

The methodology consisted mainly of a thorough literature review and secondary data analysis. It was necessary to carry out an analysis of academic literature, material derived from SPS committees, including World Trade Organisation documents and any material relevant to the agro-food trade and the strategies for compliance adopted by developing countries. Secondary data analysis involves returning to an existing data set which was collected for a specific purpose and analysing it for a different objective (Ritchie and Lewis, 2003) or to investigate new research questions. Thus, data pertaining to the export of agro-food products from Mauritius was compiled from the website of Statistics Mauritius prior to analysis.

4. Evolution in Mauritian Agro-food Exports

Mauritius is an island state situated in the Indian Ocean. It is an upper-middle-income country as per the World Bank's classification of economies (World Bank, 2011). Agriculture, manufacturing and services have emerged as the three pillars of the economy. Sugar remained the main agricultural export because of a guaranteed quota and price for exports to Europe. However, with the new WTO rules this preferential treatment is to be phased out. As a result, the government is trying to diversify within and out of this sector (MOAIF, 2007).

Mauritius acceded to the WTO on January 1 1995, engaging itself to meet a number of commitments relating to trade liberalisation. Moreover, since Mauritius is signatory to the SPS Agreement, SPS measures in force must be based on international standards or risk assessment. Being a member of international and regional organisations such as the CAC, OIE and IPPC, Mauritius further commits itself to use their standards.

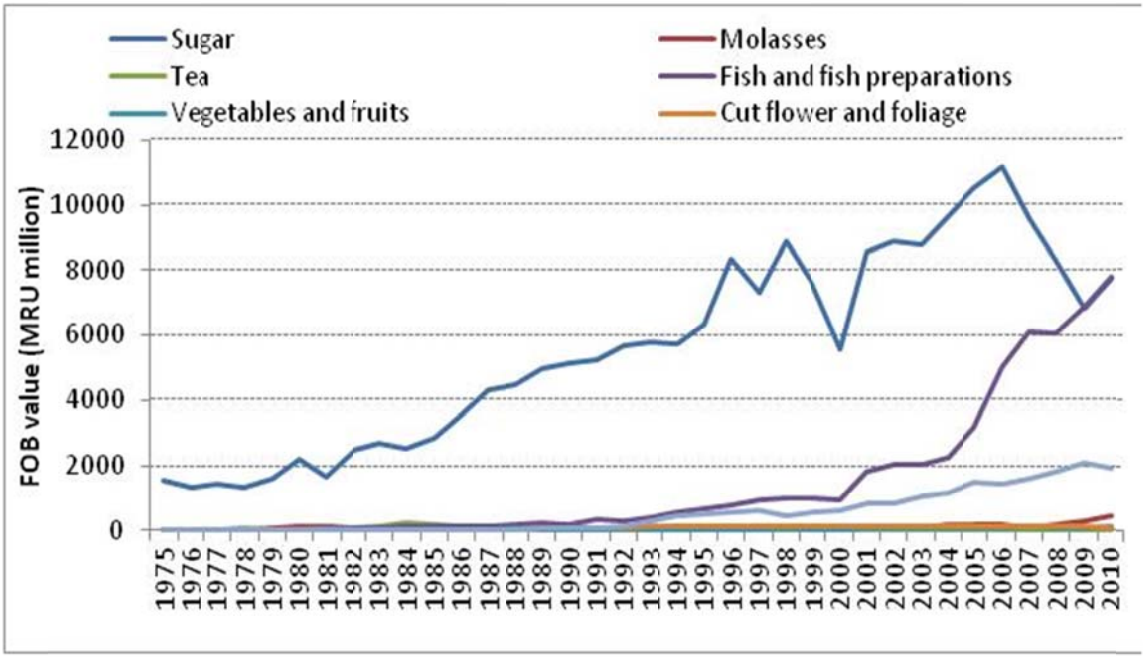

Figure 2 Trends in export revenue from agro-food products.

Data source: Statistics Mauritius (1984 to 2010)

Mauritius currently exports agricultural and food products mainly to the United Kingdom, Portugal, United States, France (including Reunion Island) and Madagascar in order of priority (FAO, 2008), but also to Germany, Italy, Netherlands and Spain. For instance, cane sugar is mainly exported to the United Kingdom, cut flowers and foliage to Italy and Japan and cane molasses to Netherlands. Traditionally, most of the revenue from Mauritian exports of agro-food products came from sugar (figure 2). Since the early 1990s, domestic exports of agro-food products excluding sugar have also been constantly increasing. For instance, from 1993 to 2010, such exports experienced an increase of 565.6 percent in export value.

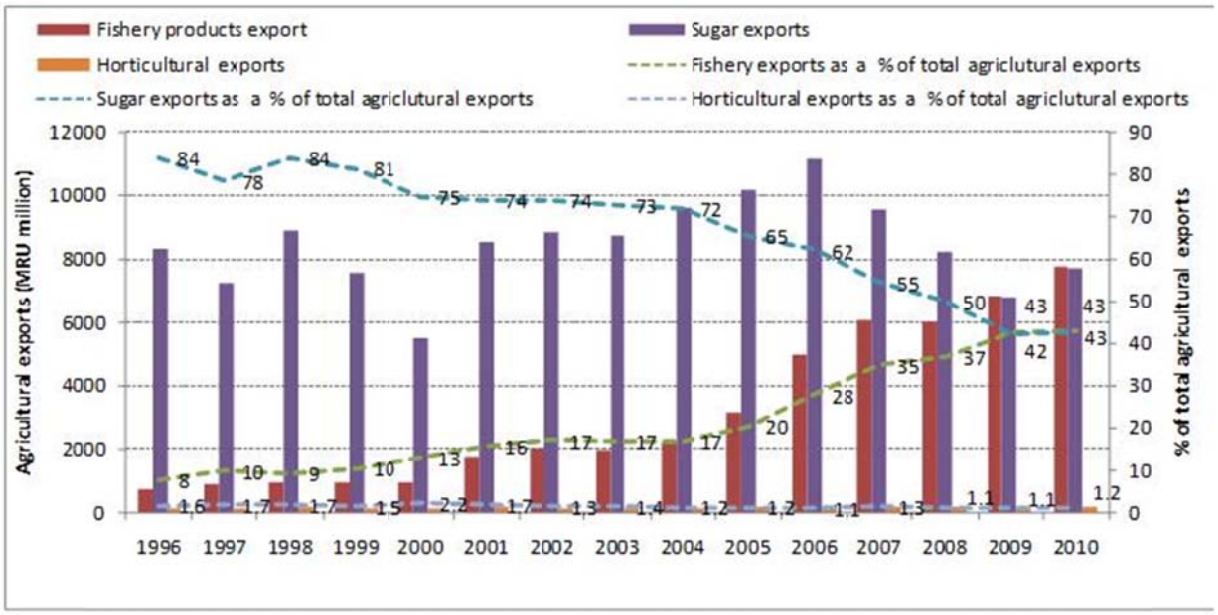

Figure 3 Percentage composition of exports of agricultural and food products.

Data source: Statistics Mauritius (1984 to 2010)

Jaffee and Sewadeh (2005) pointed out that agro-food exports of developing countries have traditionally been dominated by a number of primary tropical commodities, but later there was diversification into other, higher value products. In this article, we study agro-food exports from Mauritius. Mauritius has gradually diversified from the trade of primary commodities like sugar and tea in the seventies to HV non-traditional agro-food exports like fresh and/or processed fruits and vegetables, meat products, fish and fishery products and floricultural products. Mauritian exports of HV products (fish and fish preparations, cut flowers and foliage and fruits and vegetables) rose from 14.8 MRU million in 1975 to 7,997 MRU million in 2010 (FOB values). From figure 2, it can be observed that the export values of fish

and fish preparations and vegetables and fruits respectively increased by 1867.2 percent and 507 percent over the period 1993 to 2010.

This phenomenon is further illustrated in figure 3 in terms of the share of higher value products in total agro-food exports.

The most spectacular rise in such exports is that of fish and fish preparations. In 2010 these accounted for 43 percent of total agro-food exports, as compared to 42.7 percent for sugar. This finding is of significance, as in 2010 sugar was no longer the main agro-food export from Mauritius, and exports of fish preparations have emerged as a major export. Along the same line, HV exports account for 44.2 percent of total agro-food export from Mauritius (figure 3).

5. Evolution in Global SPS Environment: Implications for Mauritius

5.1 Setting up of National Food Control Infrastructure

As a signatory of the SPS Agreement, Mauritius has an obligation to meet certain obligations (WTO, 1995). Since successful export diversification often relies upon prior or parallel development of domestic markets (Jaffee, 1993), countries must have quality infrastructure for food safety, including the necessary regulatory and technical back-up (ITC, 2005; UNCTAD, 2005), for them to participate in international trade and meet WTO requirements (Bruno, 1996; Kenny, 1996; Lux, 2002; WTO, 2003). The term "infrastructure" refers to the "totality of the institutional framework, whether public or private, the output of which includes the process of formulating, issuing and implementing SPS standards and regulations and the associated evidence of compliance (i.e. the relevant mix of inspection, testing, certification, metrology and accreditation), in order to improve the suitability of products, processes and services for their intended purposes, prevent barriers to trade and facilitate technological cooperation" (ITC, 2005). The SPS infrastructure is the institutional set-up required to comply with SPS requirements of trading partners and to demonstrate compliance (Henson et al., 2002). As part of the SPS infrastructure, developing countries thus need to establish the necessary food control infrastructure to ensure the competitiveness of the export sector (ITC, 2005; Westlake, 2005; UNCTAD, 2005), to ensure prompt compliance with food standards and regulations set in developed-country markets and to ensure the protection of the local consumer, including tourists.

While a number of changes have taken place locally with the accession of Mauritius to the WTO, there is a need to consolidate the food control infrastructure in order to align it with certain international principles (FAO and WHO, 2003):

- development of a national food control strategy and of comprehensive legislation covering food safety from farm to fork;
- establishment of unified enforcement practices;
- accreditation of official laboratories;
- adoption of a preventative approach and of transparency;
- separation of the function of risk assessment from risk management;
- delineation of responsibilities for food safety control.

5.2 Expanding Agro-food Exports: Compliance Strategy for Mauritius

The classification of approaches as proposed by Henson and Jaffee (2008) has been used as a backbone, upon which the findings of this study have been grafted, to chart the likely strategies that the Mauritian government and private firms could adopt in order to continue exporting. It is important for Mauritius to make its "voice" heard at the international level using opportunities such as the meetings of the WTO SPS Committee and of international standards organisations. Since Mauritius is a member of a number of regional blocs, it can participate in the activities of international bodies from a regional point of view. Mauritius could also provide its input in Codex committees, in the WTO SPS committees and in the committees of the OIE and the IPPC so as to make its voice heard.

It is important for Mauritius to develop an agricultural and agro-industrial export strategy targeting all players in the supply chain. It is wise to concentrate on selected products where Mauritius benefits from a niche market or has comparative advantage. Based on the evolution in agro-food exports it is clear that the rise in fishery exports did not occur by chance. There is comparative advantage for Mauritius to favour fish exports because of the following:

- competition is not as harsh, owing to the limited number of quality/safe suppliers on the world market;
- the product currently enjoys duty exemption under the Cotonou Agreement;
- there is a remunerative demand for certain niche products, e.g., fresh fish from Reunion Island;
- it has an EEZ of 2.4 million km^2 with a good stock of fish.

Mauritius has to maintain its market share for fish. Given its specificities, Mauritius cannot compete based on economies of scale and more competitive prices. It should therefore increasingly focus on food safety determinants of competitiveness. Local producers and growers should also adopt a more professional approach and participate in the upgrading of the domestic production and marketing system: an

artisanal system can no longer be entertained. The new "farm to table" concept requires a preventative approach to be built into the system and the consolidation of relationships between stakeholders as well as greater interaction between public and private modes of regulation, with the food industry taking the lead role and holding the responsibility for food safety. Both public and private sectors have an important role to play in the export of fish and horticultural products. But success in many developing countries has occurred due to an array of private sector initiatives with limited government intervention. The food industry must invest in the preparation and implementation of codes of practice for GAP, good manufacturing practices, traceability, hazard analysis critical control point (HACCP) and ISO 22000.

Exporters must continue to use SPS measures as a competitive tool and keep abreast of regulatory changes and effect prompt changes if economically and scientifically justified. Firms must also contemplate product differentiation, the implementation of private standards and grading as possible avenues for maintaining exports to the EU. Group certifications must be envisaged in view of the high costs of certification. Government could provide support for GAP certification through free training of farmers and subsidised chemical residue analyses by accredited laboratories.

Compliance with standards and regulations does not necessarily secure higher market shares, as other requirements such as the ability to supply at internationally competitive prices also affect exports. However, the supply chain must continue to maintain and improve standards of hygiene and food safety control more generally so as to be geared for the future evolution of requirements in export markets. The characteristics of SPS measures are such that they demand a proactive system and participation of all stakeholders. Since, on the global market, food safety measures are being continuously revised and upgraded, it is important to be proactive, both in terms of monitoring change and reacting to it. Mauritian exporters have to remain informed of the alert systems and the regulatory changes that occur in the EU and use compliance as a strategic tool in agro-food exports through the implementation of proactive approaches. The setting up of an agro-food export promotion agency could assist in providing market intelligence with particular emphasis on mandatory regulations and private standards. It could also forecast the likely evolution of regulations and standards and focus on non–food safety issues that affect competitiveness. An export promotion agency could also assist firms to cope with emerging private food standards and to maintain their competitiveness for niche markets.

References

Boza, S. (2013). Assessing the impact of sanitary, phytosanitary and technical requirements on food and agricultural trade: What does current research tell us? SECO / WTI Academic Cooperation Project, Working Paper Series 2 / 2013, University of Chile.

Bruno, A. (1996). Review of national import food control systems. Food safety and quality control systems – Scientific background and their application for public health. In *Proceedings of Joint FAO/ILSI-EUROPE Workshop, 18-22 November 1996 Warsaw*. Rome: Food and Agriculture Organisation.

Das, K. (2008). Coping with SPS challenges in India: WTO and beyond. *Journal of International Economic Law* 11(4): 971-1019.

Davis, J.R. (2006). How can the poor benefit from the growing markets for high value agricultural products? Greenwich: Natural Resources Institute.

Day, R.K. (2013). More trade, safer trade: Strengthening developing countries' sanitary and phytosanitary (SPS) capacity. CABI Working Paper 4.

DFID. (2011). The engine of development: The private sector and prosperity for poor people. London: Department for International Development. Available at: www.gov.uk/government/publications/the-engine-of-development-the-private-sector-and-prosperity-for-poor-people

Diaz Rios, L.B., and S. Jaffee. (2008). Barrier, catalyst, or distraction? Standards, competitiveness, and Africa's groundnut exports to Europe. Agriculture and Rural Development Discussion Paper 39. Washington DC: World Bank.

FAO. (2008). FAOSTAT. FAO Statistics Division [online]. Rome: Food and Agriculture Organisation. Available at: http://faostat.fao.org/site/342/default.aspx (Accessed 22 March 2008).

FAO and WHO. (2003). *Guidelines for Developing an Effective Food Control System*. FAO/WHO 1/1. Rome: Food and Agriculture Organisation.

Feyrer, J. (2009). Trade and income-exploiting time series in geography. NBER Working Paper 14910. Cambridge, Mass.: National Bureau of Economic Research. Available at: www.nber.org/papers/w14910

Fulponi, L. (2006). Private voluntary standards in the food system: The perspective of major food retailers in OECD countries. *Food Policy* 31(1): 1–13.

Garcia Martinez, M., and N. Poole. (2004). The development of private fresh produce safety standards: Implications for developing Mediterranean exporting countries. *Food Policy* 29(2): 229–255.

Gebrehiwet, Y., S. Ngqangweni, and J.F. Kirsten. (2007). Quantifying the trade effect of sanitary and phytosanitary regulations of OECD countries on South African food exports. *Agrekon* 46(1): 23-29.

Henson, S. (2004). National laws, regulations and institutional capabilities for standards development. In *World Bank training seminar on standards and trade, 27-28 January 2004, Washington.* Washington: World Bank.

Henson, S. (2006). The role of public and private standards in regulating international food markets. In *Food regulation and trade: Institutional framework, concepts of analysis and empirical evidence, 28-30 May 2006, Bonn, Germany*.

Henson, S.J. (2008). The role of public and private standards in regulating international food markets. *Journal of International Agricultural Trade and Development* 4(1): 63-81.

Henson, S., and J. Humphrey. (2009). The impacts of private food safety standards on the food chain and on public standard-setting processes. Paper prepared for FAO/WHO. Rome: Food and Agriculture Organisation.

Henson, S., and S. Jaffee. (2008). Understanding developing country strategic responses to the enhancement of food safety standards. *World Economy* 31(1): 1-15.

Henson, S., S. Jaffee, C. De Haan, and K. Van der Meer. (2002). *Sanitary and Phytosanitary Requirements and Developing Country Agri-food Exports: Methodological Guidelines for Country and Product Assessments*. Washington: World Bank.

Henson, S., K. Preibisch, and O. Masakure. (2001). *Review of Developing Country Needs and Involvement in International Standards-setting Bodies*. Reading: Centre for Food Economics Research.

Henson, S.J., and T. Reardon. (2005). Private agri-food standards: Implications for food policy and the agri-food system. *Food Policy* 30(3): 241-253.

Hirschman, A.O. (1970). *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States.* Cambridge, Mass.: Harvard University Press.

Hobbs, J.E. (2010). Public and private standards for food safety and quality: International trade implications. *The Estey Centre Journal of International Law and Trade Policy* 11(1): 136-152.

ITC. (2005). *Innovations in Export Strategy: A Strategic Approach to the Quality Assurance Challenge*. Geneva: International Trade Centre.

Jaffee, S. (1993). Exporting high-value food commodities: Success stories from developing countries. World Bank Discussion Paper 198. Washington: World Bank.

Jaffee, S., and M. Sewadeh. (2005). Changing structure of developing country agro-food exports. Washington: World Bank.

Jaffee, S., and S. Henson. (2004). Standards and agro-food exports from developing countries: Rebalancing the debate. World Bank Policy Research Working Paper No. 3348. Washington: World Bank.

Jaffee, S., and S. Henson. (2005). *Agro-food Exports from Developing Countries: The Challenges Posed by Standards*. Washington: World Bank.

Jaffee, S., S. Henson, and L. Diaz Rios. (2011). Making the grade: Smallholder farmers, emerging standards, and development assistance programs in Africa: A research program synthesis, Report number 62324-AFR. Washington: World Bank.

Josling T., D. Roberts, and D. Orden. (2004). *Food Regulation and Trade: Toward a Safe and Open Global System*. Washington: Institute for International Economics.

Kenny, M. (1996). Elements of an effective export food control system. Food safety and quality control systems – Scientific background and their application for public health. In *Proceedings of Joint FAO/ILSI-EUROPE workshop, 18-22 November 1996 Warsaw*. Rome: Food and Agriculture Organisation.

Kinsey, J. (2003). Emerging trends in the new food economy: Consumers, firms and science. Working Paper No 14575. St Paul: International Agricultural Trade Research Consortium.

Liu, P. (2009). Private standards in international trade: Issues, opportunities and long-term prospects. In *The Evolving Structure of World Agricultural Trade: Implications for Trade Policy and Trade Agreements*, eds. A. Sarris and J. Morrison. Rome: Food and Agriculture Organisation.

Lux, N. (2002). Measurement of the Compliance Costs for US Food Quality and Safety Standards for European Export Businesses. Thesis (Ph.D.), Virginia Polytechnic Institute.

Mehta, R., and J. George. (2003). Processed food products exports from India: An exploration with SPS regime. Technical Report Project Output, Economics, ACIAR Project, RSPAS, ANU Food Safety Issues, Trade and WTO Rules.

MOAIF. (2007). *Strategic Options in Crop Diversification and Livestock Sector, 2007-2015*. Mauritius: Ministry of Agro-Industry and Fisheries.

Nadve, K., and F. Waltring. (2003). Making sense of global standards. In: *Local Enterprises in the Global Economy: Issues of Governance and Upgrading*, ed. H. Schmitz. Cheltenham: Edward Elgar.

Neeliah, S.A., D. Goburdhun, and H. Neeliah. (2011). The SPS Agreement: Barrier or catalyst? *The Estey Centre Journal of International Law and Trade Policy* 12(2): 104-130.

Neeliah, S.A., D. Goburdhun, and H. Neeliah. (2012). Are Mauritian fishery exporters minding the standards gap? *Agrekon: Agricultural Economics Research, Policy and Practice in Southern Africa* 51(1): 59-82, DOI: 10.1080/03031853.2012.649539.

Neeliah, S.A., H. Neeliah, and D. Goburdhun. (2013). Assessing the relevance of EU SPS measures to the food export sector: Evidence from a developing agro-food exporting country. *Food Policy* 41(C): 53-62.

OECD. (2003). *The Impact of Regulations on Agro-food Trade.* Paris: Organisation for Economic Cooperation and Development.

Peterson, E., J. Grant, D. Roberts, and V. Karov. (2013). Evaluating the trade restrictiveness of phytosanitary measures on US fresh fruit and vegetable imports. *American Journal of Agricultural Economics* May 2013, DOI: 10.1093/ajae/aat015.

Ritchie, J., and J. Lewis. (2003). Qualitative Research Practice: A Guide for Social Science Students and Researchers. London: Sage Publications.

Roberts, M.T. (2009). Private standards and multilateral trade rules. Paper prepared for FAO. Rome: Food and Agriculture Organisation.

Statistics Mauritius. (1984 to 2010). Digest of Agricultural Statistics, Statistics Mauritius, Ministry of Finance and Economic Development.

Stephenson, S.M. (1997). *Standards, Conformity Assessment and Developing Countries*. United States: Organisation of American States.

UNCTAD. (2005). Costs of agri-food safety and SPS compliance: United Republic of Tanzania, Mozambique and Guinea: Tropical fruits selected commodity issues in the context of trade and development. Geneva: United Nations Conference on Trade and Development.

Unnevehr, L. (2003). Food safety in food security and food trade: Overview. In *Food Safety in Food Security and Food Trade,* ed. L. Unnevehr. Washington: International Food Policy Research Institute.

Unnevehr, L.J. (2001). Shaping globalisation for poverty alleviation and food security. *Focus* 8(7 of 13).

Westlake, M. (2005). Addressing marketing and processing constraints that inhibit agrifood exports – A guide for policy analysts and planners. FAO Agricultural Services Bulletin 160. Rome: Food and Agriculture Organisation.

Wilson, J.S. (2000). The development challenge in trade: Sanitary and phytosanitary standards. Statement prepared for the WTO. Geneva: World Trade Organisation.

Wilson, J.S., and T. Otsuki. (2001). *Global Trade and Food Safety: Winners and Losers in a Fragmented System*. Washington: World Bank.

World Bank. (2005). *Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Country Exports*. Washington: World Bank

World Bank. (2011). World Bank list of economies [online]. World Bank: Washington. Available at: http://www.worldbank.org (Accessed 15 May 2011).

Wouters, J., A. Marx, and N. Hachez. (2008). Private standards, global governance and transatlantic cooperation: The case of global food safety governance. Workshop on Managing Biosafety and Biodiversity in a Global World, 11-12 December 2008, Berkeley, University of California.

WTO. (1995). Agreement on Sanitary and Phytosanitary Measures. Geneva: World Trade Organisation.

WTO. (2003). National Food Control Systems: Components and Operations. Geneva: World Trade Organisation.

WTO. (2007). Committee on sanitary and phytosanitary measures reference documents. Geneva: World Trade Organisation.

WTO. (2013). Document online search facility [online]. Geneva: World Trade Organisation. Available at: http://docsonline.wto.org/imrd/gen (Accessed 7 June 2010).