Environmental Protection in the International Agenda: Opportunity or Threat to Agricultural Trade?

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ABSTRACT: Environmental protection and international business do not seem to get along and appear to have a negative causal-relationship. If more measures are applied to protect the environment, businesses' costs increase and lose competitiveness. Thus, the increasing urgency and pressure to protect the environment has been changing the way business is done, not only because non-tariff measures keep multiplying, but also because exporters need to comply with them by modifying their production process, technology, quality of products and productivity, which increases their costs and threatens their business plans. In particular, the agricultural industry in developing countries are the most affected by these new environmental-related requirements. Hence, we propose in this paper to study the application of these measures by the European Union in the market of tea, coffee and yerba mate in Latin America, and analyze the role of cooperation at different levels (national, regional and international) in international business and environmental protection. In our findings, we highlight that although these measures can affect firms negatively in the short-term, when companies comply with them can experience a positive growth in their productive quality in the medium-long term. In this context, cooperatives, organizations and governments play an essential role to help firms, specially SMEs to exceed their costs.

KEYWORDS: non-tariff measures, sanitary and phytosanitary policies, productive quality, environmental protection.

CONTENT

1. CONCEPTS

1.1 Introduction

The end of the II World War brought with it the emergence of a New World Order. The rise of the United States as a *superpower* led to the expansion of their interests and promotion of their values in the world, while at the same time new international organizations started to take shape. These organizations as we know them today regulate international politics, economics and trade, enhancing multilateral cooperation. Free trade agreements and foreign investment increased exponentially while privatization and deregulation of national industries, and multilateral trade negotiations of the General Agreement on Tariffs and Trade (GATT) took place. In addition, liberalization of trade and investment and decrease of costs from technological developments in telecommunications and transportations accelerated the pace of globalization (Urata, 2002). As Gallagher (2009) pointed out, *¨trade (exports plus imports) as a percent of world gross domestic product (GDP) was 24% in 1960, 38% in 1985, and 52% in 2005. In other words, over half of all economic activity in the world economy (which is close to 50 trillion dollars in size) is traded¨* (World Bank, 2008). Hence, interdependence in international relations at all levels -bilateral, regional, and international- became stronger in political, social and economic aspects, and multilateralism became more important than ever.

However, these global changes have also impacted the environment, strengthening the urgency of addressing it in the international agenda. This has led to the rise of environment-related standards in the last decades. Developed countries -in particular the European Union and the United States- face these environmental challenges by adopting trade policies and assuming a role of leadership in the negotiations that take place in international forums. In a context where tariffs are being reduced over the years, Non-Tariff Measures (NTMs) have expanded notably, specifically technical and sanitary measures (WTO, 2012). As a consequence of the increasing application of these measures by developed countries, developing countries have shown strong criticism, especially exporters of the affected primary goods, who claim that these standards serve as hidden restrictions on trade.

For instance, we observe that in the last decade, the debate over the relationship between international trade and environment has become one of the primary issues in the international agenda. The aims of foreign trade and environmental policies diverge, and it is possible to ask if there is any possibility of complementing them. On the one hand, trade policies aim to increase the flow of goods and services, to increase wealth, and to gain access to global markets. On the other hand, the aims of environmental policies are to protect and to preserve natural resources and the quality of the environment. Therefore, it is necessary to work in the development of strategies so that both trade and environmental goals are achieved, in a way that neither of them is harmed.

For this reason, we intend to study the importance of the intervention of cooperatives and states in helping farmers to apply business strategies in terms of productive quality (productivity and competitiveness) in a context where the application of NTMs is increasing. In order to address it, it is necessary to analyze the decisions made by different exporting companies to face these restrictions, and study whether these measures have actually improved their productive capacity or if, on the contrary, costs have been too high, leaving many of these companies out of the market. Also, we need to analyze how the intervention of national public or private organizations and cooperation between states and private sector and at the international level affect business strategies in response to standards.

The goal of this research is to analyze the role of cooperation between state and private sector at the local level, between states at the regional level and at the international level on the improvement of firms' productive quality and increase of their business opportunities, in a context of an increasing application of environmental and sanitary NTMs by the European Union in the Latin-American infusion market.

We identify three specific goals:

- First, to study the production and export market of coffee, tea and yerba mate in Latin-American countries -registered in the chapter 09 of the Harmonized System of tariff classification-, as well as its potential international market.
- Second, to identify environmental and sanitary requirements in this industry applied by the European Union and analyze firms' responses to them.
- Third, to explore the importance of cooperation from the insights of professionals (interviews) and firms (surveys) and analyze its potential impacts on firms' growth.

From this study, it is possible to highlight three preliminary hypotheses:

The first hypothesis is that the perception of compliance costs depends on the size of the firm.

The second hypothesis is that those companies that manage to comply with NTMs and design sustainable business development strategies can improve their productive quality in the medium-long term.

The third hypothesis is that the role of cooperation in all levels -local institutions, state to state, state to private- is essential for businesses to exceed the costs of the application of NTMs.

1.2 Environmental protection and agricultural trade in the international agenda

Concerns about the environment started to gain strength in the international agenda in the 1960s and became more relevant after the Conference of the Human Environment of the United Nations in Stockholm, in 1972. This event concluded with the possibility of planning development in a way that does not harm the environment (Occhipinti, 2016). Thereafter, a wave of national and international initiatives emerged as a response to environmental degradation (IISD-PNUMA, 2014)[1]. For example, it was only after the Stockholm Conference that the United Nations Environment Program (UNEP) was created, which would be responsible of environmental issues -administering important agreements and launching new international and regional ones-. Hence, the need of protecting the environment has become part of international politics, which leads to both developed and developing countries to give it a greater relevance not only in their national agenda, but also, in their foreign policy.

In the need to move forward with the international environmental program, the UN created the World Commission on Environment and Development in 1985, which published the Brundtland Report -also known as "Our Common Future". The report highlights the impossibility of achieving economic growth without a sustainable environment, which is why it is necessary to recognize the protection of the environment as *"the foundation on which the economic and social development rests in the long-term"*, elevating sustainable development to the category of "global ethics" (Pardo, 1998).

According to the IISD-PNUMA (2014), this report was essential, given that all international environmental activities of the UN at the 1992 United Nations Conference on Environment and Development in Brazil -known as Earth Summit or Eco 92- were reviewed based on it. In this way, the redaction of new documents such as the Rio Declaration, the Biodiversity Agreement and the Agenda 21 expanded the organizational base of sustainable and environmental development. (Occhipinti, 2016).

Two decades later, the Rio+20 Conference (2012) took place, where members agreed to adopt *urgent measures* to achieve sustainable development. To accomplish this, a new development paradigm was adopted: "green economy". This is considered one of the most important elements in the agenda, since it would contribute to eradicate poverty and achieve a sustainable economic growth (Final Document, 2012). Thus, a green economy would generate new growth opportunities for sustainable development and for trade. Likewise, this document argues the importance of the role of international trade in the promotion of development and a sustainable economic growth. The Rio+20 Conference, strengthened the debate of the relationship that international trade and environment have. Until then, developing countries were concerned that developed countries would apply green policies with protectionist

[1] IISD: International Institute for Sustainable Development.

goals, especially on agricultural products (IISD-PNUMA, 2014). The Conference Final Document added a new point of debate related to *"the opportunities that the measures related to the green economy may generate in the developing countries in terms of development, access and creation of market, employment and sustainability"*. However, have these policies effectively opened a window of opportunity for developing countries? Or have these negotiations been used by developed countries to have a pretext to protect some of their national industries?

It is important to mention that, although developed countries have urged the world to free their economies and make trade more just, agriculture has always been a difficult issue to deal with in global trade discussions (Obregon *et al.*, 2010). When we analyze the progress of international negotiations on agricultural trade – a key sector for many developing countries, we observe that there have been many difficulties in reaching consensus and in including it in the international agenda.

Initially, this issue was excluded due to an exemption dictated in 1955. In this document, the United States proposed to remove the agricultural sector from all its negotiations due to the subsidies that it was providing to their national peasants. The reason of this proposal was to keep agricultural domestic prices at higher levels than the world market ones, preventing the entry of foreign similar products at lower prices than domestic ones. This generated strong rivalries between the US and the European Union. Until the initial discussions during the Uruguay Round in 1986, there had never been an attempt to revise the commercial norms related to this matter (FAO, 1995). In the 1980s, in a context of strong export competition, it became necessary to introduce agricultural reforms. Due to the boom in commodities and the expansion of markets during the 1970s, demand fell sharply in developing countries. At the same time, these countries were facing an economic crisis and external debt. The contraction of these markets and the falling incomes of agricultural products -the lowest in the last fifty years, intensified the commercial conflicts related to agriculture. Thus, according to Obregon *et al*. (2010), introducing this matter in the Uruguay Round was inevitable given that by the 1980s, the OECD countries had become extremely distorting and the CAIRNS Group[2] was committed not to conclude the Round until they achieved an agreement on the matter. Therefore, the achievement of the Agriculture Agreement in the Uruguay Round in 1994 was essential for agricultural exporters.

In a context of pressure for agricultural reforms, it was clear that there were two groups: on the one hand, we could find the countries that, in terms of the FAO, were waiting for a "radical reform". This group proposed a reduction of tariffs, the elimination or the limitation of domestic subsidies and

[2] This refers to the producing and exporting countries of agricultural products and food, who met for the first time in the city of Cairns, Australia. At present, it is constituted by the following countries: Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Philippines, Guatemala, Indonesia, Malaysia, New Zealand, Pakistan, Paraguay, Peru, South Africa, Thailand, Uruguay and Vietnam.

exports, and the elimination of special exceptions in the agricultural sector. On the other hand, a different group of countries "supported trade liberalization". This group considered that countries should have the right to make national agricultural policy decisions according to their national conditions, although these policies should be gradually modified in order to reduce the negative effects on trade. Thus, they argued that a moderate and gradual liberalization was enough, and they did not want international norms to limit national trade policies.

Among the main results of the Uruguay Round we first find a tariffication process, that is, a commitment to change all import barriers into tariffs. Secondly, a reduction of current tariffs and those resulting from tariffication, which led to *"a substantial reduction of the import tariffs for agricultural products and to an increased trade"* (Obregon *et al.,* 2010:17).

These changes led to domestic producers in developed countries to be threatened by imported goods coming from developing countries. It would be naïve to think that they would allow this. In fact, they sought new methods to protect their economies. Hence, although tariffs and other tariff measures have been decreasing over the years, developed countries continued to protect their national industries where they were losing competitiveness through the application of NTMs. Notably, it is agreed that agricultural trade is much more restrained than the manufacturing one, so non-tariff barriers have a greater impact on the agri-food sector than on the manufacturing industry, and as a consequence, exporters face greater restrictions on market access (Martinez, 2014). Additionally, according to Obregon *et al.*, these NTMs *"were the new mechanism that developed countries found to continue to protect their agricultural products […]*. In this way, NTMs became the most important barriers to trade, at the same time that environmental issues became increasingly important. By the 1990s, the application of NTMs that restrained global imports was inevitable.

1.3 Non-Tariff Measures: Classification and Impacts

Non-Tariff Measures refer to all policy measures other than ordinary custom tariffs that can potentially have an economic effect on international trade in goods, changing prices and/or quantities traded (UNCTAD, 2012). Among these measures we can find tariff quotas, import licenses, technical regulations, preferential agreements with third countries, sanitary and phytosanitary measures, etc.

This study is focused solely on environmental-related measures applied by the European Union on agricultural products. In this way, we analyze measures corresponding to Chapters A (Sanitary and Phytosanitary Measures), and Chapter B (Technical Barriers to Trade) of the Non-Tariff Measures

Classification established by UNCTAD[3]. We will also take into account "voluntary" requirements, which are also known as "voluntary sustainability standards".

1.3.1. Sanitary and Phytosanitary Measures

Sanitary and Phytosanitary Measures (SPS) refer to all regulations, laws, procedures and prescriptions established by different countries that they consider necessary to: 1) protect animals life and health or preserve plants from risks resulting from the entry, establishment or spread of pests, diseases and organisms carrying diseases; 2) protect human and animal life and health from the presence of additives, contaminants, toxins or pathogenic organisms in food products; 3) protect human life, animal health or plan preservation from pests, diseases, or diseases-causing organisms; 4) limit or prevent other damage to a country from the entry, establishment or spread of pests. This chapter includes all those measures related to the production processes and methods, final product, quarantine regimes, sampling procedures and relevant risk assessment methods, packaging or labeling requirements (Annex A, SPS Agreement).

It is important to highlight that the application of these measures is allowed under some circumstances. The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) -negotiated and signed in the Uruguay Round, authorizes member countries to write, promulgate and impose as mandatory their own standards on food safety and sanitary control of plants and animals. According to the GATT Article XX, the adoption of these measures is allowed as long as they do not constitute a mean of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or represent a disguised restriction on international trade.

1.3.2 Technical Standards

During the Uruguay Round, member countries also signed the Technical Barriers to Trade Agreement (TBT), which deals with measures such as labelling, standards on technical specifications and quality requirements, and other measures that aim to protect the environment. It also includes those measures that are related to technical requirements -certification, testing and inspection-, excluding the ones that are covered by the SPS Agreement (UNCTAD, 2012).

In the Agreement, ¨technical regulation¨ is described as a document which ¨*lays down product characteristics or their related processes and production methods, including the applicable administrative provisions [...]*" and that may also "*include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or*

[3] Experts of eight international organizations -FAO, IMF, UNCTAD, World Bank, WTO, OECD, International Trade Center, UNIDO) discussed and proposed a global classification, and its final revision was made in 2012.

production method" (TBT, Annex I). Measures that regulate required information, fonts types, sizes and colors on packaging and labelling may also be applied. The Agreement also classifies a "conformity assessment procedure" as '*any procedure used, directly or indirectly to determine that relevant requirements in technical regulations and standards are fulfilled*" (UNCTAD, 2012). This may include procedures such as inspection, evaluation, sampling, verification and assurance of conformity, accreditation and approval, or their combinations.

1.3.3 Environmental measures

In the last two decades, the application of voluntary sustainability standards has become increasingly important. According to IISD-PNUMA (2014), these measures are *voluntary* and are not applied by governments, but by NGOs and the private sector. According to the United Nations Forum on Sustainability Standards (UNFSS), these are standards that establish requirements that producers, employers, manufacturers, retailers or service providers must meet in relation to a wide range of sustainability parameters, like basic human rights respect, occupational safety and health, environmental impacts, community relations, territorial planning plans, etc." (IISD-UNEP, 2014: 88). In general, these measures are required by main and biggest buyers in order to obtain better quality levels, promoting a more sustainable production and consumption.

1.3.4 Impacts of Non-Tariff Measures

In order to avoid the excessive application of measures under the SPS and TBT Agreements, they must comply with some requisites, such as notification, transparency in the creation of standards, application of international standards when it corresponds, and proportionality. Additionally, they must comply the non-discrimination principle. As we mentioned before, this means that there should be no arbitrary or unjustifiable discrimination between members whose conditions are identical or similar, neither in their own territory nor in others' (WTO). The main difference between these agreements is that measures applied under the SPS Agreement must rely on scientific principles, or in other words, on scientific evidence or risk assessment (IISD-PNUMA, 2014). In this way, disguised restriction on trade would be avoided. However, these types of measures are on a "top priority line" compared to other agreements, given that its main aim is to preserve human life. Because of this, they may be applied with greater discretion and have more legitimacy. Hence, when scientific evidence is uncertain, countries are allowed to adopt *temporary* precautionary measures, according to the "Precautionary Principle" of the Article V, paragraph 7 of the SPS Agreement (Obregon *et al*., 2010).

Thus, many scholars agree that the application of these measures and voluntary sustainability standards led to affected exporting developing countries to be strongly concerned about their

businesses, as these measures not only restrain their market access, but also, they imply huge costs for their firms. If firms cannot comply with these standards, they can be in disadvantage, losing competitiveness. Some studies that use the gravity model confirm this negative outcome. This method is the most used approach when specifically analyzing the impacts of SPS and technical measures on trade. According to it, trade volumes depend mostly on the relative size of their economies and the distance that separates them. In general, they are used to estimate bilateral trade flows in a set of countries (Fossati *et al.*, 2014). For example, these scholars study the impact of NTMs on Argentinian fresh lemon exports. When applying this method, they confirm a restrictive potential of these measures by concluding that Argentinian exports of fresh lemons to destinations that impose them were 14% lower compared to its exports to countries that did not implement them.

However, in might be possible for companies to overcome the assumed costs in the long-term, and eventually improve their competitiveness through innovation. Thus, results in the long term may vary depending on firm size. According to Galperin (2013), standards only have negative effects on exporters when they are not able to comply with them, as it is possible to observe an increase in exports sales in those companies that do comply with them. The first case is more common in SMEs, who sometimes lack of enough resources to make the necessary changes to comply with the requirements. When showing evidence from horticulture, the World Bank (2005) states that *¨SMEs are seen to be disadvantaged given the knowledge-intensity and/or economies of scale associated with certain standards-related functions*" (2005:103). Hence, firm size is an essential variable to determine their capacity to respond proactively and to have a more ¨offensive voice¨[4] when standards are applied. For bigger-sized companies, unit costs are lower, they have a greater negotiation margin when new regulations are applied, and they have a better access to capital. Moreover, evidence from the production of fruits and vegetables in Kenia shows a change in the quantity of small exporters. While there were more than 100 licensed exporters by 1980 -most of them small or medium sized-, there were around 20 by 2005. Although it is true that failure rates of SMEs have always been high, the World Bank highlights the fact that in recent years there has been relatively little new entry into trade. In this sense, the increase of costs due to the application standards affect SMEs competitiveness and entry into trade.

As it is observed, the challenge lies in the improvement of productive systems, which requires regional and international cooperation. This topic is addressed in chapter 4, where experts and firms are asked about the importance of governmental intervention, and regional and international cooperation.

[4] According to the World Bank., when companies develop offensive strategies, they use standards to gain competitive advantage, even if it requires additional investment beyond the minimum required to achieve compliance.

2. WHY COOPERATION IS NECESSARY

2.1 Green economy and firms' competitiveness

As the relationship between the application of NTMs and trade competitiveness became more relevant in the international agenda, it did in the academia as well. While there are scholars that claim that the new green economy paradigm had a positive impact on firms' competitiveness, others state that this transition had mostly negative effects on them.

The traditional view of environmental protection impact on the private sector predominated until the 1980s. According to it, a greater protection -environmental regulations such as environmental taxes, technological standards, etc.- generates additional costs for firms, and reduces their competitiveness. This traditional perspective has been challenged by the Porter Hypothesis and other distinguished analysts. According to Porter *et al.* (1995), the new competitiveness paradigm is dynamic, based on innovation. Based on this assumption, he states that *well*-designed environmental regulations can increase competitiveness by stimulating innovation. From his perspective, pollution implies a waste of resources, so its reduction can lead to an improvement in productivity. In this sense, environmental regulations give signals to firms about the inefficiency of their resources and potential technological improvements, since they are not always aware of their "efficiency frontiers". Therefore, these requirements could help them to discover new forms of innovation, both in quality and cost-saving, improving in this way their environmental performance and exceeding the assumed costs. In addition, environmental regulation generates pressure on companies -of the same kind as the one generated by the presence of strong competitors, and the increase of raw material prices or customers' demands-, thus motivating progress and innovation.

In this way, innovation as a consequence of these regulations can have positive impacts both in the affected goods and their production process. In other words, these goods can be transformed into better-quality, safer, and more efficient ones. Regarding the production process, because of these measures, companies can simplify designs, stop using expensive materials and reduce their production times. Moreover, they save costs of some raw materials -through reuse, replacement or recycling-, they have lower energy consumption and safer working conditions, and they may improve the use of their resources, which may lead to an improvement in the productivity.

For instance, applying measures to protect the environment might be appropriate to improve the productivity of Latin American infusions trade. However, there is a contradiction between the established goals of the FAO and reality. Because developed countries apply strict NTMs and "voluntary" sustainability measures, Latin-American firms must comply with them without margins of flexibility. This means that their costs are higher than their short-term profits, and in some cases, it

leads to a loss of competitiveness instead of improvement. In other words, NTMs are not being applied with the aim to protect the environment and improve productivity through sustainability measures but because developed countries "*will always try to protect their economies and their weakest sectors from international competition. Above all, there is no real intention of the industrialized countries to open their markets, since they are favored by the fact that others liberalize their markets while they maintain their own closed"* (Obregon, 2010:26).

While the Porter Hypothesis gained some academic support, he also aroused strong criticism in others. In fact, according to Ambec *et al.* (2011), there is a much confusion in the literature regarding the Porter Hypothesis. For example, he claims that the application of environmental regulations stimulates firms' productivity, and in consequence, their competitiveness (Porter *et al.*, 1995). One of the most important criticisms -from the maximization of profits assumption- is that firms do not need to be regulated in order to make innovations that increase profits. On the contrary, it generates unnecessary additional costs that impede the maximization of benefits. This means that environmental regulations do not necessarily generate incentives to make these kinds of innovations (Chudnovsky *et al.*, 1997). However, Porter claims that environmental regulation overcomes organizational inertia. In other words, firms' decisions are in hands of a manager, who loses investment opportunities because they are expensive and very risky and prefers to take those opportunities that generate profits in the short-term. Instead, environmental regulations lead to innovations that have medium-long term benefits. Hence, *"by making those investments more profitable or requiring them, environmental regulations help the manager overcome this self-control problem, which enhances firm profits¨* (Ambec *et al.*, 2011:5).

Additionally, Porter also clarifies that regulations should include market incentives, such as pollution taxes, deposit-refund schemes, and tradable permits. Moreover, flexibility must be granted in the application of such measures and productivity of resources must be reinforced (Porter *et al.*, 1995:111). In the same line, Ambec *et al*., coincide with the benefits that environmental regulations have, stating that they can lead to a Pareto improvement or a "win-win" situation, *"by not only protecting the environment, but also enhancing profits and competitiveness through the improvement of the products or their production process or through enhancement of product quality".* In other words, the authors clarify that Porter does not support the idea that all regulation necessarily leads to innovation, but only those that are "*well-designed*".

A second criticism to Porter Hypothesis is the absence of a theoretical framework that supports his hypothesis in a conceptual plane. For this reason, Chudnovsky *et al*. (1997) provide a theoretical framework that interprets Porter in a different way, verifying -from their point of view- the feasibility

of his theory and leading to the "Porter II" Hypothesis. Unlike neoclassical theory, evolutionism supports the idea that an important part of technical knowledge can be characterized as tacit, specific, of difficult transferability and imitation, and not always fully understood. Hence, technical change is, in general, cumulative and "local". (Chudnovsky *et al.*, 1997:10). In this way, each company can employ a limited quantity of techniques, and in order to master others, they need an extra effort of research and development, of "*learning by doing*", and of "*substantial learning efforts".* Therefore, according to the authors, firms have certain routines and operate with limited technological and organizational capabilities, so their possibilities to innovate -in addition to their strategies and decision-making- are restricted.

An important factor in this debate is the temporal one. As Ambec *et al.* (2011) explain, some scholars do some research about the impacts of these measures in the short term (time 0), which means that firms had not enough time yet to innovate and make changes. Therefore, in order to observe the impacts of environmental regulations on productivity, it is necessary to extend the analyzed period. Dechezlepetre *et al.* (2014) do a time analysis of environmental regulations' impact on productivity, employment, trade and innovation. They conclude that these measures have negative effects on employment and productivity in the short-term, but these impacts tend to be reduced in the long-term (although it will also depend on other factors, like market conditions and workforce quality). Moreover, while environmental standards encourage investment in clean technologies, they discourage development and research in conventional ones.

Sanchez *et al*. (2008) also do a quantitative research regarding the impact of technical barriers to trade on Argentine exports and labor market. For their purpose, they analyze the national survey on firms' innovation and their technological behavior in different years: 1992, 1996, 1998 and 2001, a total of 9 years. Thus, they conclude that an increase of standards can potentially restrict international trade and have a negative effect on the size of the export sector in developing countries. However, at the same time, these measures can represent an opportunity for exporting companies to increase their productive quality, since they improve the average level of qualification of their employees. Hence, according to this research, although it is true that these standards can have a negative impact on the total exported, there may be other positive impacts that allow them to exceed costs.

In conclusion, the traditional vision of the impacts that regulations have on the firms' competitiveness has been questioned by the Porter Hypothesis, which has generated deeper debates in the academia. Thus, firms are in fact restrained or limited by their national context and their technological and organizational capacities, so they cannot implement immediate innovations, although they can do so in the medium term. Therefore, although the application of environmental regulations can have

negative effects on the total exports in the short term, they can improve firms' competitiveness in the long term by reducing their production costs, improving their product or their productive quality. In order to study this in the case of Latin-American exporting firms, we surveyed companies involved in the infusion industry, measuring the results in a period of 10 years.

2.2 The Role of Cooperation

If it is true that those companies that are able to exceed the new assumed costs due to the application of NTMs can actually grow in the long-term, then it is necessary to analyze how they can achieve this. In theory, adaptation to the new standards through innovation, amelioration of their competitiveness, and application of new strategies would allow them not only to comply, but also to gain more access to markets and as a consequence, increase their exports. However, this is not an easy task, and cooperation at different levels is necessary.

2.2.1 International Cooperation

International cooperation has been remarked by many global leaders as a key factor to strengthen international trade. According to Horst Kohler[5], the overriding priority is to work toward restoring global confidence to consumers and investors, and the ¨vital ingredient" of confidence-building is strengthening foreign trade through international cooperation. In his own words, *¨In a world of growing economic and political interdependence, this* [confidence-building] *requires the credible demonstration of international cooperation*" (Horst, 2003). In this speech, he also highlights that trade is the key opportunity for developing countries to help themselves, as they generate growth and reduce dependence on aid over time. In order to achieve so, international organizations such as the WTO, the World Bank and the IMF play a critical role in supporting the governments of these countries.

However, as it was explained, concerns arise when NTMs are applied, given the possibility of their application with hidden purposes, and their effects. For this reason, transparency is a requirement in order to achieve international cooperation in trade policy. According to the WTO (2012), international organizations attempts to improve NTMs transparency by including obligations in the different agreements. These transparency obligations are constantly being debated in the different WTO committees with the aim to improve transparency even more.

Thus, the TBT and the SPS Agreements require that WTO Member countries, when developing and applying measures, find a balance between the achievement of the goals they pursue and trade

[5] At the time of his speech (2003), Horst Kohler was the Managing Director of the International Monetary Fund (March 2000-March 2004).

restriction. However, developing and applying these measures can be difficult, especially because it is hard to measure their effects, and sometimes Member countries apply measures that are not efficient neither enough to achieve their goals and/or they generate unnecessary barriers to trade (WTO, 2012). Given this dilemma, experts propose different methods to overcome these problems.

One of them is multilateral cooperation through the development of international norms. In this case, the interested parts cooperate on issues related to TBT and SPS measures. The result of this cooperation process is a new international standard that is used as a mean of coding and promulgating the most recent scientific and technical knowledge related to a certain product or a policy problem. This way to cooperate is the most encouraged one by the TBT and SPS Agreements, and hence, they will not consider that a certain standard generates an unnecessary barrier to trade if it is in conformity with international standards.

Another way to cooperate is the dissemination of good regulatory practices. According to the WTO (2012), this can create a framework where countries start using the same "regulatory language". In this sense, governments dialogue in different formal and informal contexts, exchanging information related to norms and principles that are applied to regulate markets. As a result, countries develop more compatible and transparent regulations and test procedures, which leads to simplify regulations and to decrease trade obstacles. Moreover, exporters find it less costly to demonstrate compliance.

2.2.2 Regional Cooperation

In 2016, the ex UN Secretary-General Ban Ki Moon remarked the importance of regional cooperation and integration to build a better future in the XXI century. In his own words, "*regionalism is being harnessed in addressing issues like trade, food and energy security, climate change, connectivity and the outbreak of health epidemics*" (Moon, 2016). According to him, regional commissions spearhead the UN efforts to support their member countries in the implementation of the 2030 Agenda - promotion of integration, policy coherence, statistical capacities, peer learning, etc.

Specifically, as the application of NTMs continue to increase every year, many companies may not be able to comply with them without facing high costs. In this context, cooperation between states within the same region is important in order to face these challenges and to increase their exports to the world. How can this kind of cooperation take place? First, states exchange information, which can present opportunities for the affected industries, given that they gain new skills, improve their production process, gain access to new technologies and improve their quality. Second, if governments within the same region cooperate, they can achieve common agreements on certain issues, such as the product quality analysis techniques, laboratory testing methods, definition of

"doubtful" products, implementation of common strategies, etc. As a consequence, all the involved countries can be benefited, as they gain a stronger voice in international negotiations and in facing the application of sanitary and phytosanitary measures. Overall, regional cooperation can lead to a reduction of the costs caused by the application of these standards.

As we may expect, this process is not easy. In other words, *"deep regional economic integration requires addressing NTMs and needs strong political support from all involved States. Harmonizing NTMs and eliminating barriers is challenging and depends on the development and implementation of appropriate procedures and mechanisms. Addressing NTMs that are needed to protect human, animal or plan life, or the environment, may be even more challenging if different approaches and objectives exist within the region"* (UNCTAD, 2014).

In the case of Latin America, there is a need to enhance regional cooperation and integration. Although it is true that there is a regional effort to strengthen regionalism, Latin-American countries have not always shown real openness to regional integration. For example, by 2002, the average Latin-American had preferential trade agreements with around four regional partners, and by 2010, this rate increased to around 10. However, the volumes of intraregional exports compared to the total exports has been in average around 20% over the years, which is very low compared to the intraregional exports of other regions. As we observe in Figure 1, the European Union+15 had an intraregional trade flow of around 60% over the total trade. On the other extreme, Latin America and the Caribbean only had a 15% of intraregional exports over the total trade, and its rate is very similar to the one that Subarian Africa had.

Figure 1: Proportion of intraregional exports compared to the total (2014, in percentage). Names of regions in english in order as the figure shows: European Union+15, Eastern Asia and Pacific, United States-Canada, Eastern Europe and Central Asia, Latin America and Caribbean, Sub-Saharan Africa.

Source: World Bank, 2017.

If Latin America strengthens its regional trade, the region can share knowledge, have more competitive tariffs that lower the costs of exports/imports, generate more business, and, in general, be more competitive in the rest of the world (World Bank, 2017).

2.2.3 Cooperation with Cooperative Societies

It is widely agreed that cooperatives have an essential role for economic development and growth. In particular, international organizations like the FAO and the ILO highlight their importance in poverty reduction, food security and sustainable development. Yet, what are these cooperatives and what are their aims? According to the ILO (2002), a cooperative is "*an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise*". This commercial enterprise seeks to find the right balance between obtaining benefits and satisfying the members and communities' needs and interests. Thus, cooperatives not only provide their members financial opportunities, but also, they provide them different services and business opportunities (FAO, 2012).

International organizations also agree that cooperatives have an essential role in the reduction of poverty. First of all, these cooperatives help farmers to gain access to the necessary production means to cultivate land, apply innovations in their production process; also, they help them to process, transport and sell their products. Second of all, cooperatives generate employment opportunities. Given that they employ at least 100 million people, they ensure the livelihoods of around half of the world population (Esim, 2014). According to FAO (2011), "*in 2008, the largest 300 cooperatives in the world had an aggregate turnover of US$1.1 trillion, comparable to the gross domestic product (GDP) of many large countries*".

Specifically, in agriculture industry, agriculture cooperatives have a very important role in supporting smallholder farmers (FAO, 2012). In many rural zones, agriculture is the main source of employment and income. Hence, cooperatives offer opportunities and services to these smallholder farmers and disfavored groups, such as a better training in natural resource management, a better access to markets, information, technology, credit, general training and infrastructure. Moreover, they play a fundamental role in health and social care, as well as in water and energy supply in rural areas, and they are often present where private or public providers do not have the willingness or capacity to reach. (Esim, 2014). In terms of trade, they help them to compete with big national and international companies in equal footing, and they favor fair trade. Since in Latin America an important proportion of the population depends on agriculture to survive poverty, these cooperatives play a fundamental role that is explained in more detail in Chapter 3.

Recognizing their role, ILO encourages the adoption of measures that promote the potential of cooperatives in all countries -irrespective of their level of development- in order to assist them to contribute to sustainable human development, increase savings and investment, develop their business potential, etc., and in this way, enable them to respond to their needs of their members and the society (ILO, 2002).

2.2.4 Cooperation between State and Cooperatives

As explained above, international organizations recognize and support the role of cooperatives in the development of different industries. In this context, what is the role of the State in the development of cooperatives' programs? Should it cooperate with cooperatives or should it apply its own plans of actions?

The relationship between State and firms and cooperatives in particular affects the socioeconomic activities of these entities and the society as a whole (Marín de León *et al.*, 2011). In other words, the kind of relationship they have is a key factor that influences whether the private sector will or will not be able to exceed the costs assumed due to the applied NTMs. There exist different points of view regarding the role that the State should have in supporting cooperatives. Marín de León *et al.* (2011, pp. 4) explain that there are six main different points of view:

- Cooperatives are movements that are totally independent from the State (neoliberal)
- States must provide financial support, so cooperatives are not isolated.
- States should only provide support under certain situations of social tension.
- Cooperatives are independent and States should contribute to their diffusion.
- States should intervene in the sector.
- States must establish relations of mutual help and collaboration with cooperatives (example: Cuban case).

In the case of Latin American countries, many states recognize the key role that cooperatives play and the need of supporting them. Most of them will have a point of view similar to the ones mentioned in middle, and there are very little cases where the states will support the first and last cases (which are the most extreme ones). For example, by 2011, the Argentine government supported the idea of creating new tools that would contribute to a better development of the cooperative movement. According to the President, it was urgent to generate a financial system that would provide rural credit, and it was working on the implementation of special credits for cooperatives (Premici, 2011). Support from states can also be done with the cooperation of regional or international organizations. For example, the government of Chile announced in 2018 that it would modernize the structure of its

agriculture cooperatives in cooperation with the Inter-American Institute for Cooperation on Agriculture (IICA). This program would analyze the successful experiences of Costa Rica, Spain, Canada and Holland, and was expected to benefit more than 200 thousand families living in rural zones. The IICA General Director -Manuel Otero- announced that this represented a great opportunity to promote plans of actions of technical cooperation that would lead to progress (EFE, 2018).

3. MARKET ANALYSIS: COFFEE, TEA AND YERBA MATE

As explained before, in order to analyze the role of cooperation at different levels in international trade in a context of increasing application of NTMs, we analyze their application on the coffee, tea and yerba mate in Latin-American exports. As it will be explained, coffee is one of the most important agricultural products in economic terms; tea is the second most drank beverage in the world; and the yerba mate has recently aroused interest in many countries and seems to have an increasing potential in the international market.

Hence, we first study the global market of these products; this is, their annual exports, main exporters/importers, and tendencies in foreign trade. Second, we identify the Latin-American competitiveness through an analysis of their production capacity, domestic consumption, main exports and potential markets. In this way, we can determine whether the NTMs applied by the European countries affect Latin-American exports of these products, and based on it, what strategies exporting countries can establish in order to expand their production and exporting capacities.

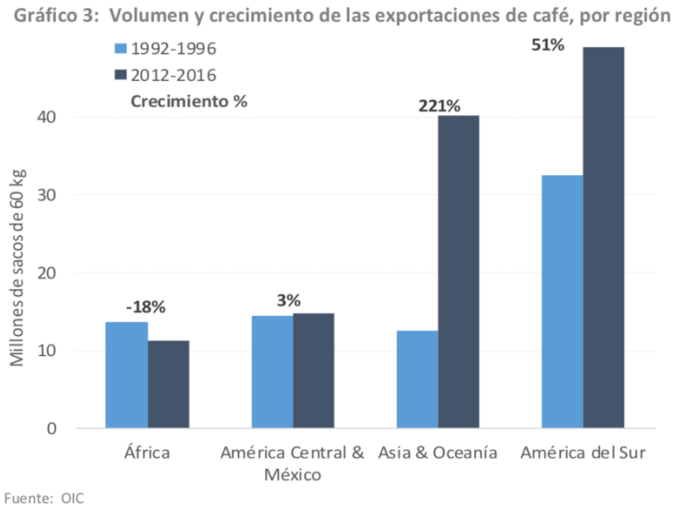
3.1 INTERNATIONAL CONTEXT

3.1.1 Coffee

The coffee market has a global economic relevance for different reasons. First of all, it employs more than 20 million people in the world. Second of all, it occupies a central place in the beverage industry as it is considered an “essential element” in the daily life of different populations all over the world. Third, when we analyze USD traded internationally, coffee is ranked second after oil, as it generates revenues over USD 15 billion for exporting countries (Brenes *et al*., 2016).

The evolution of this beverage in terms of production and exports over the decades is remarkable. If we analyze the exports evolution between two periods of 5 years (1992-1996 and 2012-2016), we observe that the international volume of coffee exports increased 57%, and 42.1 million of bags more were traded (ICO, 2018). While Asia is the region where the exports increased the most (they tripled in 20 years), the South American exports increased around 51% and Central American only around 3%.

Figure 2: Growth of coffee exports by region (1992-1996 and 2012-2016) in millions of bags of 60 kg. Names of regions in order as the Figure shows: Africa, Central America and Mexico, Asia and Oceania, South America.



Source: International Coffee Organization (2018)

The expansion of coffee trade is particularly explained by the increase of coffee consumption in emergent markets and in the exporting countries themselves. According to Brenes *et al*. (2016), globalization played an important role, as it allowed an increase of foreign trade flows and of global means of communication. As a consequence, occidental cultural tendencies expanded towards countries of "recent openness to globalization".

Among the main exporting countries by 2013 (Annex 1), we observe that Brazil is both the first global coffee producer and exporter (20%), followed by Vietnam (15%), Colombia (6%), Indonesia (7%), Germany (7%) and Guatemala (2%), India (3%) and Peru (3%). These countries are also the main coffee producers, except for Germany. The reason why this country is one of the main exporters without being a producer is because of the big amounts of intrafirm trade that the company Neuman Kafee does. This company controls more than ¾ of the global coffee trade, controlling around 8 firms and around 56% of the global market (Roldán *et al.*, 2003).

It is also important to highlight that exports in this industry are mostly concentrated in a few exporting countries, and data shows that it has concentrated even more over the years. While the 10 main coffee exporting countries represented 75% of the total exports in the period 1992-1996, they represented 86% by the period 2012-2016 (ICO, 2018).

3.1.2 Tea

Tea is the most widely consumed beverage in the world after water. Although the *Camellia Sinensis* is harvested in more than 50 countries, four of them have produced 64% of the total production in 1995, and 75% in 2015: China, India, Kenia and Sri Lanka (FAOSTAT, 2018).

According to FAO, the proportion of Asian tea production has increased from 82% (1995) to 84% (2015). This increase is explained by the exponential growth of Chinese production of tea, as while it concentrated 21% of global production in 1995, it concentrated around 40% by 2015. At the same time, the proportion of other countries' production in the same region decreased, including India. However, this does not mean that production in terms of quantities has decreased; on the contrary, it has increased. In general terms, according to the National Food Directorate, global tea production shows a positive tendency, as there has been an increase of 17% in the total volume between 2000 and 2005 (Parra, n.d.).

As it may be expected, tea consumption has also had a positive tendency in the last decades, given the GDP per capita of emergent countries -particularly China. In Latin America, Chile is the country that consumes the most tea (more than 1 kilo per person annually).

3.1.3 Yerba Mate

Yerba mate is a high energy infusion brewed from caffeinated and nourishing leaves of South American rainforest, also known as *Ilex paraguariensis.* It is well known for containing caffeine, having antioxidant and inflammatory properties, and thus, boosting the immune system. Its production is concentrated in three countries only: Argentina, Brazil and Paraguay -in that order of importance-. At first, it was Paraguay who led the ranking; however, different geopolitical and commercial wars affected yerba mate production and distribution (BBC, 2017). At the same time, Argentina, Uruguay and Paraguay consume 90% of the global production, which is explained by the identity and tradition that this beverage represents in these countries.

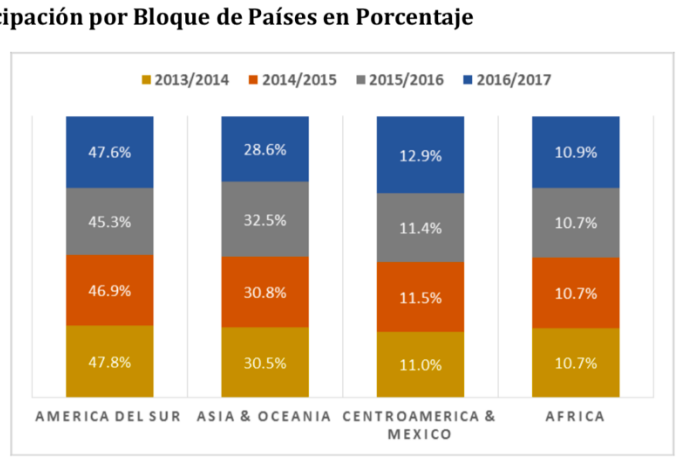
In Argentina, this beverage represents an identity symbol, and because of its land and productivity, it can supply the domestic market and have a surplus to export (Velarde, 2011). Thus, according to BBC (2017), Argentina is the country that counts with the largest land for yerba mate cultivation, with a total of 165 thousand hectares, followed by Brazil (85 thousand) and Paraguay (35 thousand), which has allowed them to produce around 777 thousand tons of green leaf between 2013 and 2017.

3.2 Regional Context

3.2.1. Coffee

When we analyze the main coffee producers and exporters, it is notable that Latin America plays an important role in the international industry. South America, Central America and Mexico has represented more than 60% of the total global production from 2013 to 2017 (Figure 3).

Figure 3: Percentage that groups of countries represent in the production of coffee at the international level. Name of regions in order of appearance: South America, Asia and Oceania, Central America and Mexico, Africa.



Source : Harvest Report 2016-2017. IHCAFE.

In a similar way, Latin-American countries' coffee are among the most exported ones. By 2013, 7 out of the 20 top coffee exporters were Latin-American countries: Brazil, Colombia, Honduras, Peru, Guatemala, Mexico and Nicaragua (Annex no. 2). In fact, Brazil was and continues to be the first coffee exporter in the world (ICO, 2013). Moreover, according to Brenes *et al.* (2016), Latin-America's consumption of coffee is relatively low (around 2.5 kilos/person per year) compared to the global average (4.5 kilos/person per year), and hence, has exported 90% of its production between 1980 and 2011.

Coffee production and export are essential in the life of many farmers, and in particular, the small ones, who depend on their sales to survive poverty. In Central America, coffee is one of the main crops of agricultural export and employs around 1.8 million people (Brenes *et al.*, 2016). Moreover, coffee is cultivated in areas where poverty index is high -60% of people in Central America live below the poverty line. According to IHCAFE (2017), around 120.000 families are subscribed as small coffee farmers in Honduras, where the coffee industry employs more than 1.1 million people. For instance, a reduction in coffee production can have important negative consequences in the life quality of these people, increasing seasonal unemployment and regional poverty rate.

In this context, there are different socio-economic factors that can threaten coffee production, as climate conditions, prices instability and the inability to trade. For example, evidence shows that changes in rain, droughts and progressive increase of temperature are affecting coffee production directly and indirectly, given that it is very sensitive to climate conditions (Brenes *et al*, 2016).

Also, the European Union is the region that imports and consumes the most quantity of coffee in the world. Hence, Latin-American countries exported to Europe half of its Arabic coffee production by 2015. In the same year, from the 9.6 million of coffee bags that Germany consumed, 6 million were

from Brazil, Colombia and Honduras. Additionally, the EU has a participation of 72% in Honduras' exports (IHCAFE, 2017). However, the EU is also the region that applies the most restrictive sanitary and phytosanitary measures to its trade. In this context, because small farmers can be seriously affected both by climate conditions and non-tariff measures, the support from local governments and cooperatives may be necessary for the development of the industry.

3.2.2. Tea

As data suggests, Asia is the leader region of tea production and trade, and from 1995 to 2015, 11 out of the 20 top producing countries were Asian. Instead, Latin-American countries represent a very small proportion of the global tea production. Among the most important producing countries are Brazil and Argentina. According to the analyzed information from FAO, Argentina represented 2% of the global production of tea in 1995, 2010 and 2015, and 1.5% of the total exports. Being among the top 10 exporters in the world, Argentine's tea industry has shown a growth tendency since the beginning of 2000s. Schwartz (2011) informs that the country's tea production has increased around 3% annually between 2005 and 2011. Given that regional consumption of tea is very low, this country exports around 90% of its production.

Members of the European Union are among Argentine's most important importers of tea. Although its main buyer is the United States, countries like Germany, Holland and the United Kingdom follow.

As in the case of the coffee industry, it is important to highlight the importance of smallholders. According to FAO (n.d.), smallholders have become the main producers in the increasingly global tea trade, as the industry provides work and income throughout the year and requires a relatively small investment. Argentina is not an exception, as smallholders and their cooperatives represent an important part of the production and trade of tea (Harmes-Liedke *et al.*, 2012). However, FAO explains that stringent regulations put pressure on these smallholders, who now find it challenging to comply with the limitations of the quantity of chemicals that can remain on the harvested tea leaves. In terms of the FAO (n.d.):

> "Smallholders tend to use less expensive chemicals, which usually means they are older brands, while in many cases manufacturers have not updated their guidelines on how to comply with modern safety standards. Thus, importing countries have estimated residue limits on their own, often setting them much lower than actually needed for safety – limits that make it difficult for smallholder growers to comply. Also, with importing countries setting their own MRL standards, exporting producers must provide paperwork proving their compliance for each individual destination. Even growers who have no pest problems, and thus use no chemicals, still must go through the time and expense of providing paperwork that proves their compliance".

Hence, importers have applied these measures without a real understanding of the production process and without flexibility. According to Liedke *et al*. (2012), production costs of smallholders are much higher than their incomes. Moreover, their profits decrease continuously, so they are forced to stop the production, and in some cases, to sell their lands. At the same time, big firms increase their hectares of tea production, improve their productivity and innovate in their quality process.

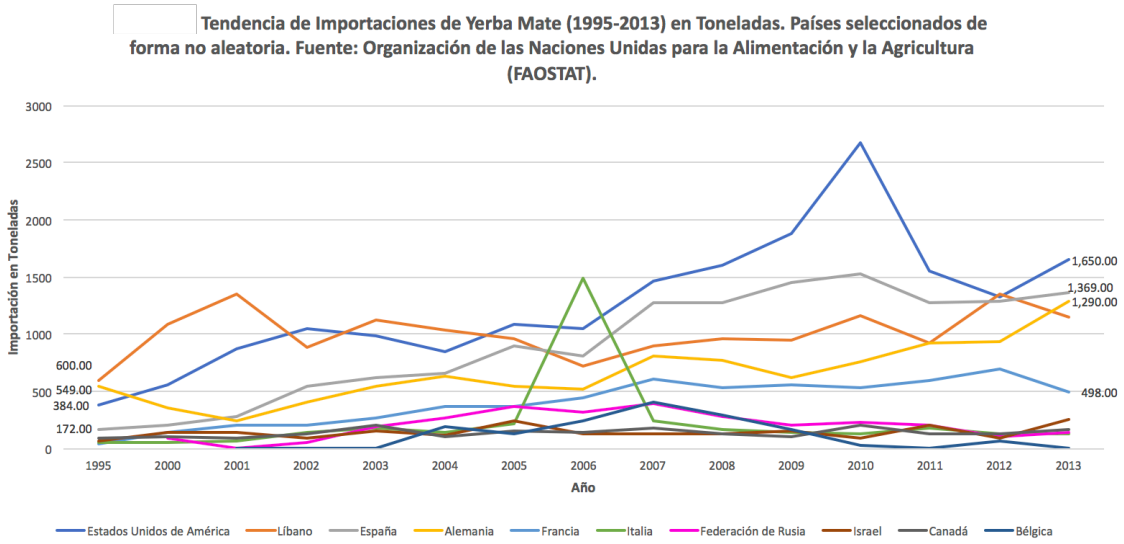
3.2.3. Yerba Mate

As explained before, the yerba mate market is concentrated in three South American countries. While Argentina remained the leader in exports in FOB terms by 2013, Brazil did so in terms of exported tons. Paraguay is self-sufficient and it also generates exportable balances, while Uruguay is supplied by the Brazilian market through linked businesses.

In the case of Argentina, the production of this beverage is concentrated in two main provinces: Misiones (90%) and Corrientes (10%) (Rau, 2009). Their subtropical weather allows optimal conditions for cultivations, where the National State has applied a program of agricultural colonization since 1926. As in the case of coffee and tea, SMEs are important in the industry of yerba mate, especially family agricultural production. Since then, Misiones has increased its production to around 6000 and 25000 tons annually, which means that there is an increase of 5000 hectares per year. By the first years of the 2000 decade, small and medium groups of producers would start to cooperate to create associations, groups of discussions, meetings to discuss common goals, tools, alliances possibilities, etc. As a result, with the assumption of the president Nestor Kirchner in 2003, some institutions were created with the aim to regulate the industry. Among the most important ones we highlight the National Institute of Yerba Mate (INYM), which promotes the industry development. Although there had been regulating entities before, they were dissolved in the 1990s as a result of the deregulation of the industry, causing the prices to go down. Since its creation, the INYM has worked intensively and allowed national producers to recover a share in the income equivalent to that they had had in the previous period.

According to the FAOSTAT database of 2013, we find Uruguay (43%), Syria (30%), Chile (10%), United States (2%), Spain (2%) and Germany (2%) among the most important importers of yerba mate. Only 5 of the top 20 importers of this beverage are from the European Union, and its import total proportion was relatively low by 2013. However, the yerba mate is becoming a trend in international markets. The consumption of this beverage has been increasing throughout the decades, which can represent a window of opportunity for Argentina, Brazil and Paraguay (Figure no. 4).

Figure 4: Tendency of Yerba Mate imports in tons (1995-2013). Countries selected in a non-aleatory way. Name of countries that appear in the figure in order: United States, Lebanon, Spain, Germany, France, Italy, Russia, Israel, Canada, Belgium.



Source: Food and Agriculture Organization of the United Nations (FAOSTAT)

The Argentine industry looks forward to consolidating its global leadership as a producer and exporter. In words of Luis Pietro -President of INYM-:

> "*we are looking for new markets and our yerba, due to its characteristics of production and processing, has its own particularity and we want to show it to the international trade, with the quality that the product must have and taking into account that consumers of the world know about quality"* (Clarin, 2016)[6]

Hence, as we observe, the yerba mate presents a window of opportunity and a challenge for producing and exporting countries. While its benefits to the immune system and its potential as a beverage for people who pursue a healthy and active lifestyle present an opportunity to promote its consumption globally, it also requires that producers adapt to the international market requirements, specially the compliance with sanitary and phytosanitary standards.

3.3 Challenges for Latin-American countries

As we observe, Latin America needs to establish strategies that help these industries increase their proportion in the international market, diversifying and developing international potential markets. However, involved countries constantly face different challenges -the debate over the role and intervention of the State, climate change, national public policies, international standards- which affect national economies. According to Obregon (2010), these problems have impeded producers to

[6] Translation made from Spanish to English by author. The original message was: "*Estamos buscando nuevos mercados y nuestra yerba, por sus características de producción y elaboración, tiene su particularidad y la queremos hacer notar en el comercio internacional, acompañando con la calidad que debe tener el producto y teniendo en cuenta que los consumidores del mundo saben de calidad*". (Clarín, 2016)

innovate in their productive systems, ameliorate their competitiveness, and also, engage them into dynamic markets. Moreover, there are increasing demands correlated to the growing importance of sustainability, specially from developed countries, who require that agricultural products are dully certified.

Hence, although many countries have the potential to continue developing the industry of any of the products explained above, it is essential for them to develop and achieve a more sustainable growth, making the necessary investments and making long-term plans. As Obregon explains, tariff measures can now be given a diminished attention. Instead, countries should focus on unblocking non-tariff measures, achieving a more real and effective access to international markets.

4. APPLICATION OF NON-TARIFF MEASURES

In this chapter, we aim to study the standards applied by the European Union that are related to the market of tea, coffee and yerba mate. Thus, we will first explain the main sanitary and phytosanitary measures of the industry, followed by the analysis of different Latin-American specialists' points of view about their application and the main challenges that exporting firms have in the years to come.

4.1 Limits to contaminants

In this section, we will focus on the Regulation CE No. 1881/2006, where the maximum contaminants limits are determined to protect public health, and which aims to keep these levels as low as possible with the condition that useful good work practices are established.

This regulation has six main sections of residues: nitrate, mycotoxins, metals, 3-monocolorpropane-1,2-diol, dioxins and PCBs, polycyclic aromatic hydrocarbons. According to FAO (2004), of these categories, mycotoxins have gained the most importance internationally in terms of food safety. These substances are known as a family of compounds produced by filamentous fungi, such as Aspergillus or Fusarium, which can cause diseases and health problems (Sinc, 2015). According to the author, they could be carcinogenic, hepatotoxic and they may affect the hormonal and immune system.

Due to its growing importance, countries have started to regulate them in the last years. In statistical terms, the quantity of regulations increased approximately 30% between 1995 and 2003 -in this last year, more than 99 countries had at least one (FAO, 2004). Moreover, they are increasingly more varied and detailed, with new requirements related to official sampling procedures and analytical methodologies. At the same time, countries that are members of economic communities (Australia/New Zealand, EU, Mercosur) have harmonized or are at some stage of harmonization of

several of these regulations. Within these economic communities, FAO recognizes that the European Union is the region with the most extensive and detailed standards.

There are different types of mycotoxins. The most important in the infusions industry -in particular in the coffee industry- is the Ochratoxin A (OTA). It is considered as a possibly human carcinogenic, and its presence on coffee will depend on water activity, nutrients and temperature during its production process. The available quantity of water is essential for their development, for which it is absolutely necessary to control the amount of time that coffee remains in the drying yard, in the range of water activity in which OTA-producing fungi can be developed (aw 0.8-0.95) (CAC, 2009)[7].

The European Union has established its own limits for the OTA. For the roasted and ground coffee, the maximum limit is 5 ppb, while for soluble or instant coffee the maximum limit is 10 ppb. However, different countries within the EU have established their own limits: Germany established a maximum of 3 ppb for roasted coffee and 6 ppb for soluble coffee; Italy, Spain and Portugal established a maximum of 4 ppb for both types of coffee, and Switzerland 5 ppb for both. Although the harmonized limits are similar to the Asian ones, they are much stricter than those established by Eastern Europe. Green coffee limits are still under consideration; however, 10 countries have already established their own limits, from which 9 are European (Vicam, 2017).

Although it is true that the number of regulations related to mycotoxins have increased significantly in the last years, the European Union is the region that counts with the most quantity. By 2003, 2 African countries counted with these kinds of regulations, 5 Asian and Oceanian countries, less than 5 countries in Latin America, 1 in North America, but 29 in Europe (FAO, 2004). Hence, international cooperation has been very important to approach this issue.

The importance of this type of regulations increased notably after the discovery of Ochratoxin A in coffee in 1988. Thereafter, the European Commission Federation (ECF) studied the case, concluding that it was necessary to reduce contamination at the country of origin of these products, since it would be less costly than applying control measures at the European ports (Rodriguez Jerez, 2012). In other words, costs would be transferred to producing countries, who now were forced to improve their productive systems without any delay in order to prevent the proliferation of fungi in green coffee. According to the author, the new limit of 5 ppb would imply a rejection of around 7% of green coffee imports, which in the end would affect the development of many countries.

For that reason, the International Organization of Coffee -representing coffee importers and exporters- and the Common Fund of the United Nations for Commodities requested FAO to initiate a plan in 2001 to improve coffee quality and prevent mold (FAO, 2006). Thus, they studied how farmers cultivated and produced coffee, and their different agricultural practices (Rodriguez Jerez, 2012). In

[7] Codex Alimentarius Commission Coffee.

this research, 30 countries -representing 93% of the total exported coffee- cooperated for 5 years, contributing to increase the knowledge about the different factors that cause OTA contamination, the implementation of prevention strategies, formulation of strategies and good hygiene practices. According to Rodriguez Jerez, by 2006 it was possible to observe a reduction of ppb levels from 2 ppb between 1995 and 1998 to less than 1,3 ppb between 2002-2004.

4.2 Maximum Limits of Residues

In the European Union framework, we can also find Regulation CE No. 396/2005 about the maximum limits of residues in food and feed of plant and animal origin. According to different experts, this norm is one of the greatest barriers to South-American yerba mate trade.

In particular, we analyze in this section the Anthraquinone in mate. This organic compound is present in some plants, like the *Ilex paraguariensis* which is used to prepare mate. At first, the maximum limit of anthraquinone was not established, and therefore, the maximum accepted level was 0,01 mg/kg by default. By 2012, the European Food Safety Authority (EFSA) opined about the need to establish MLR of anthraquinone in food products. Lacking evidence, the BfR[8] did a research about the effects of anthraquinone in the kidneys of 344 female rats and mice for two years. These animals were exposed to different levels of anthraquinone from 2 to 13 weeks. In the results, it was possible to observe a significant increase of incidents of tubular neoplasms in the kidneys of female rats and of hepatic neoplasms in both male and female mice (BfR, 2013). From this study, the BfR concluded that although it is true that these experiments were not carried out on humans -and therefore, the evidence on the impact on them is ¨inadequate¨- there is "enough" evidence of the carcinogenic potential of this organic compound.

However, the negative impacts that the previously established maximum levels had had in European imports of other products different to mate led to a modification of Annexes II, III, IV and V of Regulation No. 396/2005 (Regulation UE No. 1146/2014) in 2014. Hence, the new MLR for coffee, tea and mate would be 0,02 mg/kg. According to Heroldo Secco Jr. (2018)[9] -specialist in yerba mate- it is expected to observe a flexibilization in the maximum levels, given that other researches done in different parts of the world -Brazil, South Korea, England, United States, etc.- assure that natural anthraquinone benefits the body. In September 2014, BNN[10] agreed with this idea: "*In the opinion of the Scientific Advisory Board levels of up to 0.05 mg biphenyl and 0.02 mg anthraquinone per kg of product can be considered as accidental or unavoidable in terms of this public statement*" and for instance, products with these levels can be normally traded.

[8] The BfR is the German Federal Institute of Risks Evaluation that aims to advise Germany about food safety issues based on scientific research.
[9] Heroldo Secco Jr., is a yerba mate specialist and has been operating in the export market since 1999. Interview conducted on May 4th, 2018.
[10] Budesverband Naturkost Naturwaren: Association of Organic Processors, Wholesalers and Retailers which represent the interests of the organic food and natural goods on a political and economic level.

Unfortunately, the established maximum level has not been modified yet. Hence, importers are accepting products whose anthraquinone analysis's results are a little larger than the maximum established (for example, 0,03mg/kg), but they do so to a cheaper price. In other words, importers ask for discounts -even though it is recognized that the maximum levels are too low-, and as they buy products to a cheaper price, they sell them to their consumers to a much higher price (Secco Jr., 2018).

In fact, negotiations have been stalled since 2013 due to the definition that the European Union has on the yerba mate production process. In October 2015, a new regulation regarding the maximum content of polycyclic aromatic hydrocarbons (PAHs) established that the yerba mate must contain a maximum of 10,0 micrograms/kg of benzopyrene, and a maximum of 50,0 micrograms/kg of the sum of benzo-anthracene, chrysene, benzo-fluoranthene and benzopyrene. Hence, producing countries have worked hard in the last two years in order to produce yerba mate with sawdust pallets. Thus, according to Secco Jr., it is necessary to update the current regulations, as the definition that Regulation no. 396/2005 has on yerba mate only considers the traditional production process as it was done in the 1950-1960s, even though most producing companies in Argentina, Brazil and Paraguay have introduced new technologies and modernized its production process.

However, Secco Jr. states that regional cooperation between these three countries needs to be reinforced if they want to change the interpretation of what yerba mate is international law. In other words, each country has its own challenges related to sanitary and phytosanitary measures, and instead of facing them together, they work separately to achieve individual results. Moreover, while Argentina has a National Institute of Yerba Mate and Paraguay has a National Yerba Center, there is not a support of this kind in Brazil. Each Brazilian province has its own institute, and they do not cooperate with each other, which slower down the negotiation process.

4.3 Certifications and Inspections

4.3.1 Certifications

One of the main consequences of the increasing relevance of sustainability in trade agenda is the increase of certifications in products such as coffee, yerba mate and tea.

Certified products are key in EU food industry, and although having a sustainability certification is not mandatory for exporters, it has become mandatory *de facto*. In this context, consumers pay more attention to social, economic and environmental characteristics of the product and its quality than in the past (IHCAFE, 2017).

This is clear when we analyze the tendency of certifications in Latin-American countries. As Tharic Galuchi (2018)[11] explained, Rainforest Alliance's certifications started by the end of 1990s. Central America obtained its first certificates by 1998 and Brazil by 2003. From 2004 to 2008, there was a boom in the increase of certifications, as they increased around 40% annually in Brazil -in particular, in the coffee industry. After 2008, Argentina started certifying its tea products. While by the first year there were only 4 firms, today there are more than 600 producers and 20 groups, which includes around 17.000 hectares of tea. According to the expert, companies consider certifying their products necessary to gain access to international markets. Not having certified products can affect the company's competitiveness, which drives even small firms to try to obtain them.

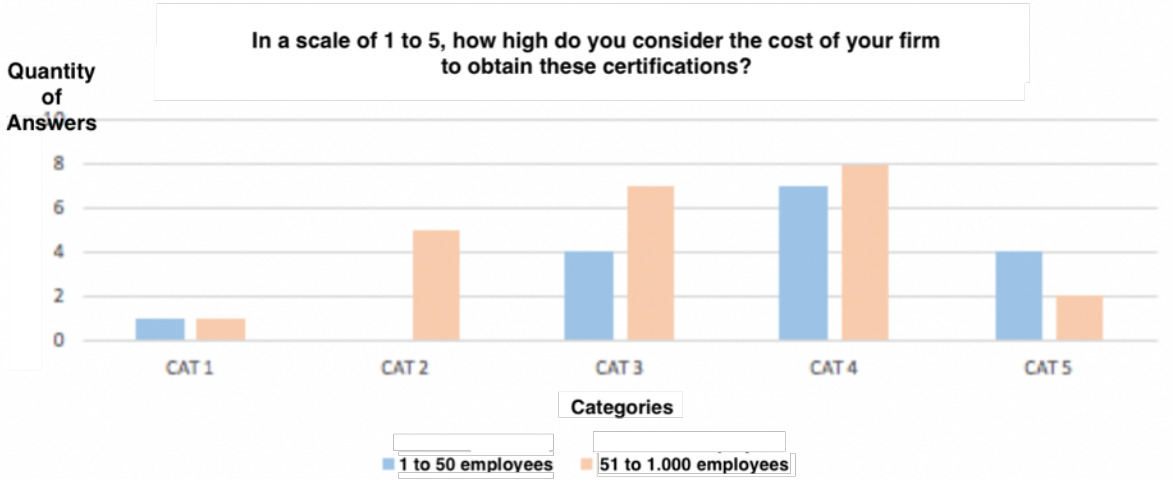
Thus, we analyze how costly exporting companies consider it is to get these environmental-related certifications, and how they impact in their decision-making. In the current market, there is a tendency for firms to obtain multiple certifications, as it is considered that the more certifications they have, the greater the possibilities to negotiate with their customers and to sell their products more easily. According to Secco Jr., rather than finding costly to obtain certifications firms find it costly to *maintain* them, as American and European certificate companies do a very relevant propaganda with consumers, explaining that the only way to protect the environment and to guarantee employment is by purchasing certified products. Moreover, smaller firms tend to have more difficulties to manage these certifications. In particular, this has become a real concern in the yerba mate industry and parties are already working to find ways to support these firms. In this way, those companies that can cover the costs of obtaining and maintaining these certificates have a better access to different markets, while smallholders find limitations in expanding their businesses.

In our survey[12], we asked Latin-American exporting firms of coffee, yerba mate and tea about the costs of obtaining these certificates, where Category 1 meant "very low" and Category 5 meant "too high". In general terms, we observe an increasing scale of the perception of costs, where the category 4 is the peak (39%), decreasing in category 5 (15%). If we separate the results by number of employees that firms have, we observe that those firms that have between 1 and 50 employees are in categories 3 to 5, while the distribution of firms that have 51 employees to 1000 employees is more normal (Kim, 2018).

[11] Tharic Galuchi is the agricultural certification coordinator at IMAFLORA (Institute of Management and Certification of Agriculture and Forestry in Brazil).

[12] Survey made to 39 Latin-American firms that are currently in the industry of tea, coffee and yerba mate. We contacted them through email and social media like Facebook and LinkedIn. In total, 10 different Latin-American countries participated. To see more information, please read the paper "*La aplicación de medidas ambientales y sanitarias de la Unión Europea al comercio de infusiones latinoamericano (1995-2015)*¨(Title translated as ¨*The application of environmental and sanitary measures of the European Union to Latin-American infusions trade (1995-2015)"*

Figure 5: Survey: how high Latin-American exporting firms consider the costs of obtaining certifications for tea, yerba mate and coffee products.



Additionally, it is highlighted that those countries that are more developed are more capable of complying with sanitary and phytosanitary measures in general, while less developed countries find that their costs are too high (Murina *et al*., 2015). Marcelino Samayoa[13] agrees with this point and adds that the costs of procedures needed to obtain a certification for special qualities in the coffee industry is about USD 50 per hectares (equivalent to 7400 square meters of production area). From this perspective, for companies who are productive this would not be a problem -as the case of Honduras, where around 24 to 25 quintals of coffee per hectare are annually cultivated. However, for companies in countries with low productivity, the costs are very high. For example, El Salvador produces around 3 quintals per hectare and its exports to Europe are around 23 to 25%. Thus, the costs for Salvadoran companies can be very high, and if the necessary investments were not made to adapt to the new demands of the market, the industry could be seriously damaged.

4.3.2 Phytosanitary Inspections

In EU's imports of tea, coffee and yerba mate, it is also possible to find phytosanitary inspections. These "*customs and phytosanitary inspections at the point of entry into the EU* (Tradedesk, UE), are some of the phytosanitary requirements for the import of plants and plant-based products. In addition, we find sanitary certification of the product issued by designated authorities of the exporting country, notification to Customs before the arrival of goods, and the registration of the importer by the Official Registration office of the EU member country. If any of these conditions is not complied, then the EU importer can take temporary emergency measures. In other words, the cargo may be hold at the importing country's Customs until all the necessary laboratory analysis are finished. This retention

[13] Marcelino Samayoa is the ABECAFE Director (Association of Coffee Benefiaries and Exporters). ABECAFE is the trade union of coffee exporters and beneficiaries of Central America. Interview conducted on May 3rd, 2018.

generates very high costs for importing countries -who actually transfer their costs to exporting countries for non-compliance of regulations-. Hence, as Secco Jr. states, every firm has its own strategy to avoid the retention of their containers at the importing countries' ports. Specifically, in the case of yerba mate, some firms finish their anthraquinone analysis before their shipment. In this way, they obtain the approval and confirmation from the European importer, and only after that, they proceed to dispatch the containers to the loading port. However, it is important to note that this laboratory analysis takes a long time -around 30 to 45 days-, which means that it is not possible to finish the exporting process[14] of one container in less than 2 or 3 months in case the importer needs the goods urgently.

The fact that the laboratory analysis takes so long is a real problem for yerba mate exports from South American countries to the EU. Several experts have highlighted that the main reason of this delay is because the EU only accepts one type of methodology. In the yerba mate analysis, there are two possible methodologies to be applied: the first one is the GC-MS/MS methodology, which analyzes the smoke produced by the mass spectrophotometer. The second one is the HPLC-UV methodology, which analyzes the liquid or the aqueous extract that is consumed by people. According to Secco Jr., the HPLC-UV is accepted for beer, wine and other beverages' analysis, but it is not accepted for the *Camellia sinensis* (tea leaves). In this case, the only accepted methodology is the GC-MS/MS, and European countries consider that it should be also applied to similar products, like yerba mate. However, yerba mate producers and exporters claim that this methodology is not totally accurate to determine the content of natural anthraquinone, and hence, they have been claiming the acceptance of the HPLC-UV methodology for this particular compound. Once again, regional cooperation in this matter is essential to decrease unfair costs, since exporters have continuously observed that results of all other pesticides -except of the anthraquinone one- are perfect. Thus, in order to arrange only one shipment, exporters have to submit their product to an anthraquinone analysis that takes around 45 days, requires an investment of around USD 1500, and because of its inaccuracy, the resulting levels of anthraquinone tend to be higher than 0.02mg/kg. Instead, the UV-VIS methodology is more common, requires less time (around one week), and there many more companies that have the resources to apply it.

For those reasons, as Secco Jr. explained, many exporting companies in South America decide not to sell to European importers. According to him, some firms consider profits are not high enough to "risk" their operations. In other words, South American countries could be exporting around 4 or 5 times more yerba mate than today.

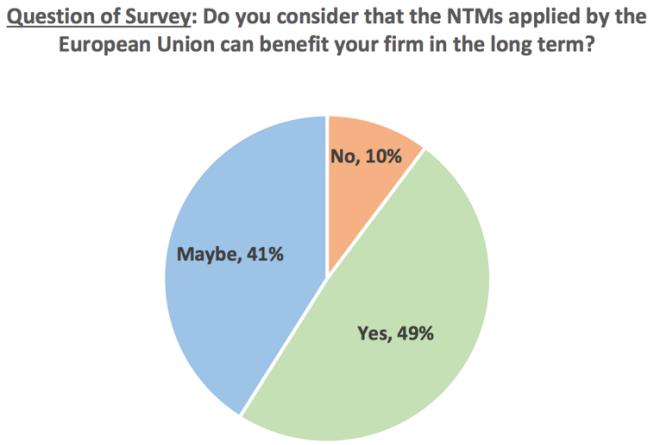
[14] From the day of purchase till the day the container is dispatched to the port.

4.4 What exporters need to do

Sanitary and phytosanitary measures are becoming stricter every year. The European Union has applied very detailed regulations that do not give space for exporters to find alternative ways to achieve the expected results. In particular, the EU rigidity presents a challenge for producing and exporting countries of tea, yerba mate and coffee in Latin-America, as complying costs become higher and challenges firms' competitiveness.

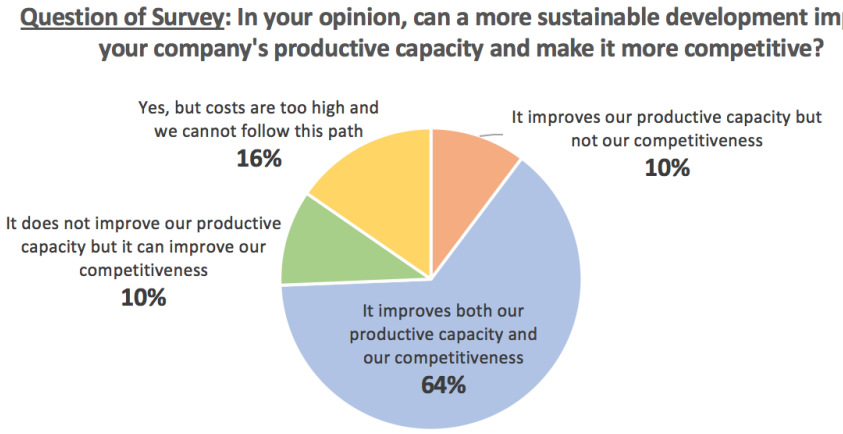
However, surveyed firms and interviewed specialists agree that these standards can improve exporters' competitiveness and their access to international markets in the long-term. For example, when firms were asked if they consider that non-tariff measures can benefit their firm in the long term, around 50% answered "Yes", 41% "Maybe, and only 10% said "No" (Figure no. 6).

Figure 6: Question: "Do you consider that the applied EU non-tariff measures can benefit your company in the long-term?"



Moreover, considering that these standards somehow force companies to design strategies that help them to achieve a sustainable development, we also asked firms if orientating towards a more sustainable development can improve the firm's productive capacity and make it more competitive. Surprisingly, most firms agreed that it benefits both its productive capacity and its competitiveness (64%), while 15% consider that they do, but that costs are too high, and they cannot do it. Only 10% consider that it does not improve its productive capacity, but it improves its competitiveness, and the other 10% claims that it improves its productive capacity but not its competitiveness (Figure no.7).

Figure 7: Question: "In your opinion, can a more sustainable development improve your company's productive capacity and make it more competitive?"



In the case of the tea industry, although it is true that certifications are considered a "must" in order to export to Europe and that exporters may not be necessarily benefited in monetary terms for such certification, it may offer them a competitive advantage over other competitors and help them to improve in efficiency, and in the near future, in income (CBI, 2016).

Thus, focusing in helping the companies of these industries to comply with standards can actually not only have positive effects in trade balance, but also to a more sustainable agriculture. In order to achieve this, cooperation at different stages is necessary.

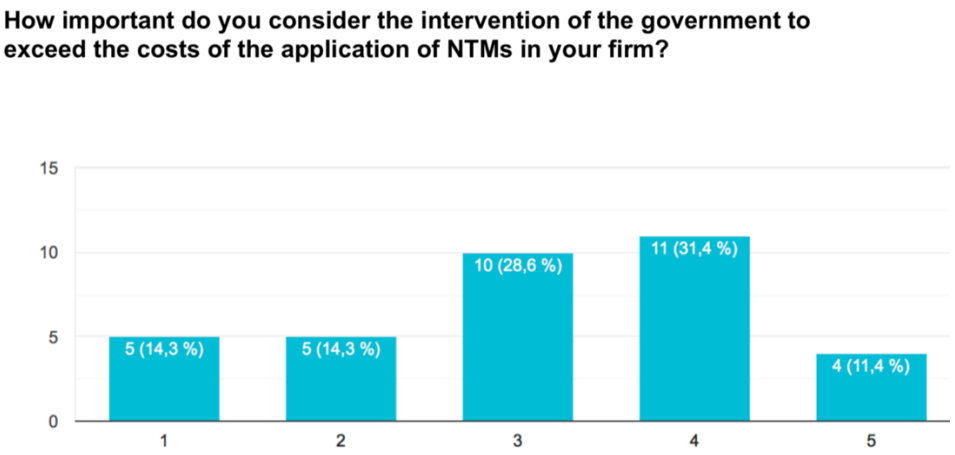
First of all, cooperation between national governments and cooperatives is essential for three different reasons. First, national governments can help firms to exceed the costs of Non-Tariff Measures. Today, the problem is that "*many exporters in developing countries lack the information, capabilities and facilities to meet these complex requirements […]. At the same time, many national policy-makers lack a clear picture of the impediments to trade that the business sector faces when complying with these measures*" (ITC, 2010). Thus, a better communication between parts can help governments to understand the industry's real needs and provide the necessary help.

For example, they can adopt measures that help firms to obtain certifications more easily. In particular, SMEs find it harder to obtain and maintain these certifications, so the role of the National Institute of Yerba Mate in Argentina and the role of the Paraguayan Center of Yerba are essential to help firms to obtain the basic certification, called HACC (Hazard Analysis and Critical Control Points). Moreover, Obregon (2010) recommends that Latin-American states invest in human capital in the fields of science, technology, research centers, laboratories, and others, for which parties need to be transparent at the time of negotiations. This is particularly important because coffee, tea and mate demands are expected to increase in the following decades. As tea and mate's international demand grow around 5% annually, and it is expected that in the following decade they are considered as the

"energy" for young people and the energy repository for athletes (Secco Jr.). This represents a business opportunity for producing countries, for which it is very important that they increase their productivity.

Second of all, access to financing represents one of the biggest challenges for SMEs (Pablo Ruiz[15], 2018). According to Ruiz, these firms are rarely qualified to gain access to financing, and if they ever do, their costs are very high, given that their interests rates are doubled or tripled compared to bigger companies. Basically, the lack of technical assistance is translated in inefficiency: low productivity, high costs of innovation, etc. In this context, the role of the government is important for the development of smallholder farmers. From his perspective, although the Foundation[16] works hard for the advance of countries towards a more sustainability in the industry, there are aspects where it cannot interfere -laws, access to financing, -etc. Also, Tharic Galuchi adds that it is necessary to expand the policies that already exist -specially to favor SMEs- and that are related to assessment, training and financial support. In the survey, many firms agreed that the intervention of the State was important to exceed the costs due to the application of NTMs. From a scale of 1 (very unimportant) to 5 (extremely important), 43% selected either category 4 or 5 (Figure no. 8).

Figure 8: Question: "*How important do you consider the intervention of the government to exceed the costs of the application of NTMs in your firm*?"



Additionally, although regulations can be very strict, they can benefit the national industry if the necessary investments are made. According to Helmuth Kummritz, the EU MLR regulation may be strict, but it also benefits Argentine tea industry for its low use of agrochemicals during its production process. Instead, Asian tea producers use a large number of agrochemicals because of the problems they face with pests and diseases. Anyhow, Argentine producers still need to prevent the red mite

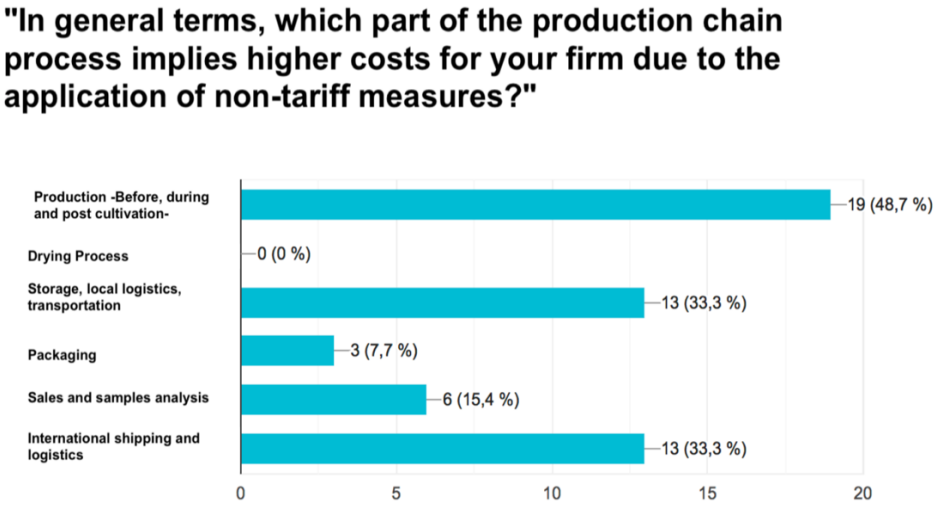
[15] Pablo Andres Ruiz is the current co-manager at the Hanns R. Neumman Stiftung Foundation for Latin America.
[16] The Hanns R. Neumman Stiftung Foundation was created by the end of the 1980 decade and beginning of 1990s with the aim to implement projects that would increase sustainability in the coffee industry, assist those countries with the greatest needs.

(*Olygonychus Yothersi*) during its production process. Once again, with the necessary investments, there are business opportunities for Latin-American countries that can potentially be expanded.

A clear example is the coffee production in Colombia. According to Marcelino Samayoa, Colombia used to produce around 12 million of coffee bags, which was reduced to 6 million during the drought season that affected production negatively. When the Colombian government helped these firms, producers were able to recover and even increase their production level to 14 millions of coffee bags, with a growing tendency towards 16 million. Instead, Samayoa explains that the coffee industry in El Salvador is becoming less and less competitive every year. The lack of public policies and scientific research, plus the drought season, worsens the national coffee industry.

Another point where the intervention of the government is important is logistics. Samayoa explained that freight is the most important obstacle to trade, given that it is very expensive and does not favor exports. Secco Jr. agrees on this matter, who explained that in 2015-2016 freight prices had significantly dropped, which led to shipping lines to decrease the frequency of shipments to South America. This led to a lack of space, increasing again the freight price, and affecting exporters in Brazil and Argentina. For these experts, logistics is a matter that governments need to manage in high level agreements. Also, around 33% of the surveyed firms agreed that "shipment and logistics issues" is the factor that implies the higher costs in the production chain (Figure no. 9).

Figure 9: Question: "*In general terms, which part of the production chain process implies higher costs for your firm due to the application of non-tariff measures?*"



Last but not least, regional and international cooperation is essential for these three sectors. It is indispensable that the Latin-American region acts together in international forums. According to Obregon (2010), these countries must ensure in bilateral and multilateral negotiations that the agreed deadlines to comply with standards are in line with the development of the producing country and the investment that can be made in them, so that they can compete internationally under equal conditions.

As we have already explained, the key role of the FAO in the management of the Ochratoxin A helped to guarantee the cooperation of a great variety of countries and to develop *neutral* studies. Only in this way it was possible to develop strategies for good hygiene practices and to prevent contamination. Regarding the interpretation of the concept of yerba mate in the world -and in particular in the Regulation no. 396/2005-, it is necessary that producing countries continue to push the European Union to apply modifications to the norm. However, negotiations within Argentina, Brazil and Paraguay are currently stagnant, as there is no unity among these three countries to act together. According to Secco Jr., the main reason is that each country faces different challenges, and plus, they continue to see each other as rivals instead of allies: Argentina still focuses in the reduction of HAPs levels, Paraguay is facing problems related to the maximum levels of insoluble ash, and each Brazil faces problems related with heavy metals. Thus, it is important that these countries find points in common that allow them to make an advance in the negotiations and to work together in the modification of yerba mate concept's interpretation. Moreover, they need to work in the advance of the negotiations related to the analysis methodology of anthraquinone.

In addition, Pablo Ruiz states that it is necessary that countries cooperate in topics related to climate change, as it cannot be treated as a separate issue. Because no country has the solution to all problems, it is necessary that they work together in order to achieve more efficient results.

5. CONCLUSION

Environmental protection is changing the way international business is done. Because of its increasing importance in the international agenda, countries have started to apply more extensive and stricter non-tariff measures related to the environment and life health. In this context, exporting countries have found that the application of these measures -mostly sanitary and phytosanitary standards- have restrained trade. However, as we have studied in this paper, they also present an opportunity not only to improve production sustainability, but also, to enhance exporting firms' productivity and competitiveness.

However, costs of complying with these measures can be very high for some firms, especially for SMEs. Because these smallholders predominate the Latin-America's tea, coffee and yerba mate industries, and many of them depend on their crops to survive poverty, cooperation at different levels have a major role than in the past.

If these firms obtain the necessary support to exceed the costs that they must face because of NTMs, it will be possible to observe not only an increase of business opportunities, but also, a more sustainable world. Thus, fighting climate change without harming international trade can be achieved only

through cooperation, which needs to be enhanced at state-cooperatives level, regional level, and international levels.

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7. ANNEXES

Annex 1: List of the top 20 coffee exporting countries (1995-2013) in tons according to the data obtained from FAOSTAT.

ANEXO 3: LISTA DE LOS 20 MAYORES EXPORTADORES MUNDIALES DE CAFÉ (1995-2013) EN TONELADAS. FUENTE: ORGANIZACIÓN DE LAS NACIONES UNIDAS PARA LA ALIMENTACIÓN Y LA AGRICULTURA										
País	**1995**	**2000**	**2005**	**2010**	**2011**	**2012**	**2013**	**Total general**	**% Representatividad 1995**	**% Representatividad 2013**
Total general	**4,712,887.00**	**6,295,754.00**	**6,772,057.00**	**8,257,013.00**	**8,537,351.00**	**9,062,699.00**	**8,927,054.00**	**130,728,949.00**	**100%**	**100%**
Brasil	787,594.00	1,021,728.00	1,444,273.00	1,877,210.00	1,879,870.00	1,589,703.00	1,785,419.00	26,904,392.00	17%	20%
Viet Nam	248,100.00	733,900.00	892,000.00	1,217,868.00	1,256,400.00	1,735,545.00	1,323,637.00	16,657,569.00	5%	15%
Colombia	569,967.00	524,769.00	634,209.00	434,085.00	458,489.00	414,975.00	562,863.00	10,801,721.00	12%	6%
Alemania	144,800.00	296,075.00	458,998.00	583,092.00	597,531.00	628,130.00	621,382.00	7,534,054.00	3%	7%
Indonesia	231,480.00	345,626.00	455,039.00	485,211.00	423,416.00	535,217.00	600,217.00	7,531,388.00	5%	7%
Guatemala	206,962.00	291,814.00	202,849.00	236,583.00	264,222.00	227,386.00	217,273.00	4,437,445.00	4%	2%
India	157,329.00	185,605.00	181,817.00	222,960.00	283,692.00	272,426.00	282,462.00	3,749,526.00	3%	3%
Perú	105,823.00	143,109.00	142,166.00	229,927.00	294,168.00	265,829.00	237,475.00	3,385,394.00	2%	3%
Honduras	106,557.00	167,003.00	145,818.00	215,501.00	253,232.00	317,447.00	254,505.00	3,346,393.00	2%	3%
México	196,054.00	290,060.00	106,805.00	124,306.00	135,496.00	183,180.00	148,484.00	3,328,253.00	4%	2%
Uganda	168,860.00	150,819.00	142,514.00	159,217.00	188,646.00	169,169.00	230,364.00	3,321,046.00	4%	3%
Costa de Marfil	140,523.00	351,959.00	100,496.00	102,941.00	38,841.00	89,551.00	87,543.00	2,784,294.00	3%	1%
Etiopía	76,567.00	118,917.00	172,193.00	211,982.00	159,177.00	203,883.00	218,989.00	2,772,932.00	2%	2%
Bélgica		125,649.00	152,689.00	275,536.00	270,699.00	259,604.00	203,311.00	2,698,701.00	0%	2%
Estados Unidos de América	95,331.00	102,124.00	123,494.00	167,829.00	199,677.00	186,772.00	181,001.00	2,502,742.00	2%	2%
Costa Rica	128,727.00	137,306.00	112,860.00	74,959.00	76,843.00	87,733.00	82,362.00	2,124,545.00	3%	1%
El Salvador	113,628.00	151,101.00	76,456.00	64,579.00	102,912.00	64,856.00	66,780.00	1,815,452.00	2%	1%
Italia	33,400.00	60,713.00	90,267.00	127,661.00	138,075.00	154,271.00	163,985.00	1,705,571.00	1%	2%
Nicaragua	38,045.00	84,503.00	59,504.00	109,219.00	93,624.00	120,152.00	98,052.00	1,391,919.00	1%	1%
Papua Nueva Guinea	55,100.00	66,600.00	72,203.00	58,867.00	63,853.00	64,976.00	47,273.00	1,182,275.00	1%	1%
Kenya	90,315.00	86,979.00	50,948.00	44,370.00	41,772.00	48,499.00	50,178.00	1,125,711.00	2%	1%
Singapur	95,996.00	40,730.00	83,141.00	43,290.00	48,135.00	38,759.00	32,624.00	1,036,099.00	2%	0%
Camerún	63,188.00	88,910.00	43,606.00	48,097.00	30,962.00	41,847.00	26,608.00	947,714.00	1%	0%
Francia	54,297.00	58,380.00	46,949.00	40,350.00	41,566.00	42,715.00	38,497.00	923,294.00	1%	0%
República Unida de Tanzania	48,200.00	54,335.00	47,982.00	40,047.00	40,561.00	54,307.00	62,853.00	903,424.00	1%	1%
Tailandia	76,668.00	60,520.00	37,424.00	45,509.00	44,500.00	50,362.00	54,344.00	875,431.00	2%	1%
España	17,283.00	30,090.00	53,797.00	69,529.00	61,843.00	61,242.00	63,626.00	859,326.00	0%	1%
Países Bajos	24,974.00	20,318.00	46,194.00	67,582.00	100,050.00	93,006.00	86,049.00	828,309.00	1%	1%
Ecuador	88,285.00	29,535.00	32,699.00	38,536.00	55,517.00	51,526.00	36,672.00	789,793.00	2%	0%

Annex 2: 20 Main world coffee exporters in 2013 in millions of kilos according to the International Coffee Organization, in order.

Principales exportadores de café del mundo en el año 2013		
Puesto	**País**	**Millones de Kg**
1	Brasil	1.892,98
2	Vietnam	1.300,88
3	Alemania	721,20
4	Indonesia	652,90
5	Colombia	580,19
6	India	301,96
7	Bélgica	255,42
8	Honduras	251,11
9	Perú	238,25
10	Uganda	220,31
11	Guatemala	214,50
12	Estados Unidos	194,88
13	Italia	190,92
14	México	187,92
15	Etiopía	172,20
16	Costa de Marfil	117,72
17	Países Bajos	106,86
18	Nicaragua	99,63
19	España	98,16
20	Polonia	96,90

Fuente: International Coffee Organization (www.ico.org)