Standing Committee
for Economic and Commercial Cooperation
of the Organization of Islamic Cooperation (COMCEC)

COMCEC

Strengthening the Compliance of the OIC Member States to International Standards

COMCEC COORDINATION OFFICE

February 2016

COMCEC

Standing Committee
for Economic and Commercial Cooperation
of the Organization of Islamic Cooperation (COMCEC)

Strengthening the Compliance of the OIC Member States to International Standards

COMCEC Coordination Office
February 2016

For further information please contact:
The COMCEC Coordination Office
Necatibey Caddesi No:110/A
06100 Yücetepe
Ankara/TURKEY
Phone : 90 312 294 57 10
Fax : 90 312 294 57 77
Web: www.comcec.org

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Product standards are an important source of trade costs for many countries, particularly developing and least-developed countries, including OIC member states. On the one hand, countries with weak standards infrastructure lack the support services necessary to promote competitive, high value added industries in the export sector. In addition, differences in standards design and enforcement between countries can add to trade costs, and effectively keep some developing country producers out of important international markets. Product standards therefore pose two crucial issues for OIC member states: market access, and export competitiveness. This project examines product standards and international harmonization from those twin dimensions.

There are two main aspects to this project. First, it is a diagnostic exercise: through the application of qualitative methodologies based on case studies and desk reviews, it identifies difficulties in the adoption, implementation, and utilization of international standards within the OIC's membership. Second, the project is about identifying best practice solutions in the area of international standards, based on experience both within and outside the OIC.

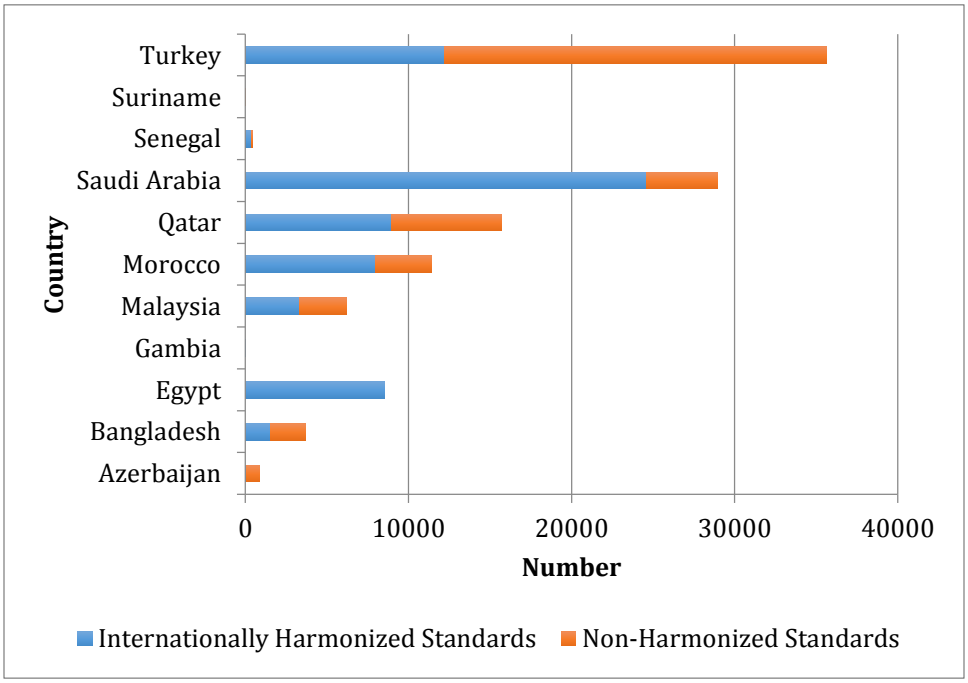
The value added of this project is that provides a basis in information and policy analysis upon which OIC countries can move forward through COMCEC on international standards, with the aim of reducing trade costs and boosting trade performance. Of particular importance on a policy level is the role of international standards in mediating relationships in Regional and Global Value Chains (GVCs). Greater reliance on international standards in GVC-intensive sectors can be expected to assist firms in joining value chains, and moving up into higher value added activities that have important spillover effects for the economy at large.

Within this general perspective, the study has four particular objectives:

1. Outline the importance and role of standards related measures (standards, technical regulations, conformity assessment procedures);
2. Review and evaluate the institutional structure (international agreements like WTO TBT/SPS and international organizations);
3. Analyze the current state in the OIC member states in terms of compliance with international standards and assess opportunities and challenges; and
4. Derive practical recommendations and policy options for the Member States.

Although data are not available for many OIC member states, the information that has been made available for the purposes of this report suggests varying degrees of harmonization with international standards across countries (see Diagram below). Some OIC member states have relatively high degrees

of harmonization with international standards such as those issued by ISO, IEC, and the Codex. Others exhibit a lower degree of harmonization. Some countries allow goods into their markets if they comply with international standards and there are no applicable local standards, which is a type of de facto harmonization. However, standards and quality infrastructure remain underdeveloped in lower income OIC member states—a contrast with the situation in higher income countries, where the body of standards in force is significant, and there is evidence of real capacity in this area, including in relation to harmonization.



Source: Author

Given the important role played by international standards in many countries, including OIC member states, it is important to ensure that international standards bodies are as representative as possible. Participation of developing countries is particularly important. A lack of effective participation by developing countries in work of organizations like ISO, IEC, and the Codex is sometimes cited as a reason why there is a case to be made that many standards are better suited to developed, as opposed to developing, country contexts. A review of ISO, IEC, and the Codex shows that OIC member states have different approaches to membership and participation depending on the organization. Participation is weakest in IEC and strongest in the Codex. However, as the ISO example makes clearest, membership alone is not enough. It is also important for countries to be actively involved in these organizations technical committees and similar bodies where standards are debated and designed. Developing OIC

member states are often active in only a few such committees in ISO, which greatly limits their ability to exercise an effective influence over the organization's work. Of course, small countries cannot expect to have the human and financial resources to participate in the same number of technical committees as large countries, so it is natural to choose based on the economic interest of different sectors. But even given this point, the evidence suggests that many poorer countries play only a marginal role in the work of international standards bodies. As a result, it may be difficult for them to ensure that the work product of those bodies is indeed appropriate to their developmental level and economic and geographical circumstances. There is surely a role for development assistance to play in helping facilitate greater participation by developing OIC member states in the work of ISO, IEC, the Codex, and other international standards bodies.

In terms of concrete examples of the use of international standards in the context of the OIC, this report looked at three case studies: Bangladesh, Egypt, and Senegal. These three countries are at different income levels, and have distinct trajectories in terms of the nature and extent of national quality infrastructure. They are also different in size, which has implications in terms of resource availability for standards and quality-related activities. Nonetheless, in all three cases, there is significant evidence that international standards play an important role as part of the overall context in which standardization activities take place within each country. Legal and factual harmonization are present to a significant degree in all three countries. The case is particularly striking for a small country like Senegal, where national standards are relatively few, and international standards are used to fill the many gaps where national standards have not been passed. This practice—which is also present in other OIC member states—is consistent with the WTO preference for internationally harmonized standards, and is a sensible way of ensuring a degree of quality control for imported goods even when national standards infrastructure is under-developed.

In all three OIC case study countries, technical assistance and capacity building, largely from outside the region, have played an important role in the development of standardization practice and quality infrastructure. External funding can be important in terms of promoting the participation of lower income countries in international standards bodies, as well as for the development of standardization capacity at home. There are clear differences of capacity between Egypt, the case study country with the highest income per capita, and the other two countries: standardization infrastructure is more developed, there is a larger accumulation of standards practice, and there is the ability to ensure implementation at different points in the economy. In all cases, however, there is still room for technical assistance and capacity building to help the countries develop standards, including those based on international harmonization, and to ensure that they are implemented in practice on the ground.

One variable that changes markedly across the three OIC case study countries is the role played by regional initiatives. They are present for all three countries, but somewhat marginal in the case of Bangladesh, in keeping with the relatively low degree of regional integration in South Asia. Egypt is an intermediate case, where some regional arrangements deal with standards, but the overall impression—perhaps due to Egypt's size relative to the rest of its region—is that the agenda is largely national and international in focus. Senegal, on the other hand, is clearly engaged on a regional track through UEMOA in particular; the broader African initiative of ARSO has been relatively inactive for a significant period, although it may be regaining momentum. The regional approach makes sense for a small economy like Senegal, as creative arrangements for harmonization and mutual recognition can make it possible to effectively share the cost of developing standards infrastructure across the West African region, rather than each (small) country having to shoulder a disproportionately high bill itself. The regional approach appears promising, although implementation on the ground remains key—and is linked to broader issues of governmental capacity and reach within the region.

In addition to examining the issues generally and studying how they play out in OIC member states, this report also examined three outside case studies: APEC, ASEAN, and the East African Community. The rationale behind choosing three regional initiatives is that they could provide guidance for the OIC as a diverse group of countries looking to deal with standards to some extent collectively. Evidence of that collective approach is present in the form of the SMIIC, as well as the interest that COMCEC has shown in supporting policy research on standards and harmonization.

The three outside case studies present very different approaches to collective work on standards and harmonization. APEC favors consensus-based targets in relation to international harmonization of national standards, but does not use legally binding instruments. ASEAN has included standards issues in some of its international instruments, and has worked on both harmonization and mutual recognition of conformity assessment. The EAC is the most formalist of the three groups studied, with a system that is similar in design to the one operating in the EU: a centralized regional standards body is tasked with developing harmonized regional standards, and national standards bodies are then supposed to implement them as national standards, and withdraw any inconsistent norms. Each group of countries has enjoyed variable success in terms of promoting harmonization.

This report's review of the evidence and policy issues suggests that APEC's approach might be the most informative for OIC member states. Although the SMIIC is a formal, legal body of a type not found in APEC, it has had difficulty in developing harmonized standards outside the halal food sector. It may therefore be possible for OIC member states to advance international harmonization by adapting APEC's model of collective targets. For instance, member states could choose a group of important sectors, and

collectively commit to achieve a given degree of international standards harmonization by a certain date. The economic interest of doing so is clear, and the APEC example suggests that if countries are truly convinced of the rationale, it is possible to move forward effectively even without legal instruments and sanctions for non-compliance.

OIC member states can move forward on the international standards harmonization agenda in a variety of different ways. There is clear scope to bring economic benefits in terms of improved market access and export competitiveness by developing national and regional quality infrastructure, as well as by relying on international standards as the basis for national norms. Concretely, member states could give consideration to the following recommendations to improve their harmonization basis and reap these economic gains:

National Agenda:

1) Conduct an audit on national quality infrastructure, leveraging outside assistance—particularly from UNIDO—as appropriate;
2) Particularly in Africa and Asia, follow the global trend away from mandatory public standards and towards private voluntary standards, notably in manufactured goods sectors including electrical equipment and machinery;
3) Explicitly recognize the important role international standards play in the global and regional economic landscape, and commit to use international standards as the basis for national standards whenever practicable;
4) Commit to increase the proportion of national standards harmonized with international standards issued by organizations like ISO, IEC, ITU, and the Codex;
5) Promote adoption of the practice of de facto international harmonization, i.e. authorization for sale of goods that comply with international standards when no contrary national standard is in force;
6) Support the private sector, especially through publication and awareness raising, in their efforts to use internationally harmonized standards in practice;

Regional agenda:

7) Commit to reduce the standards burden affecting exports of key products by other OIC member states;
8) Reinforce regional structures for standards harmonization, and ensure that, whenever possible, regional standards are based on international ones;
9) Further develop mutual recognition of conformity assessments, including on a regional or pluri-lateral basis;

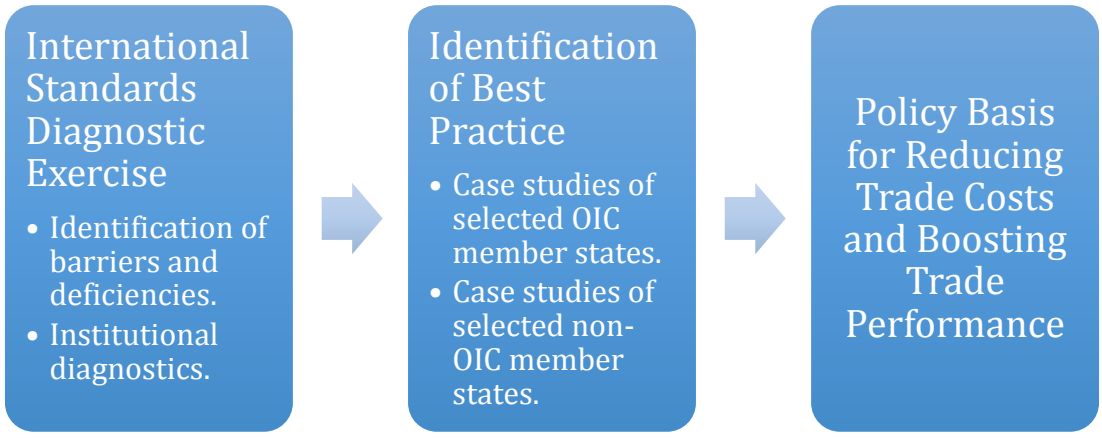
10) Participate actively in the work of the SMIIC, and support efforts to broaden its sectoral basis at the same time as emphasizing conformity wherever possible with international standards;
11) Develop programs of technical assistance and capacity building within the OIC structure to assist lower income and less developed member states to put in place key elements of national quality infrastructure, and implement internationally harmonized standards;
12) Provide resources to upgrade export competitiveness by leveraging international standards;
13) Leverage regional arrangements to promote standards harmonization, and more broadly to develop quality infrastructure; and
14) Mobilize resources to support the effective participation of lower income member states in the work of international standards bodies such as ISO, IEC, and the Codex, focusing on those areas of most economic interest.

1 INTRODUCTION AND PROJECT OVERVIEW

Product standards are an important source of trade costs for many countries, particularly developing and least-developed countries, including OIC member states. On the one hand, countries with weak standards infrastructure lack the support services necessary to promote competitive, high value added industries in the export sector. In addition, differences in standards design and enforcement between countries can add to trade costs, and effectively keep some developing country producers out of important international markets. Product standards therefore pose two crucial issues for OIC member states: market access, and export competitiveness. This project examines product standards and international harmonization from those twin dimensions.

The value added of this project is that provides a basis in information and policy analysis upon which OIC countries can move forward through COMCEC on international standards, with the aim of reducing trade costs and boosting trade performance. Of particular importance on a policy level is the role of international standards in mediating relationships in Regional and Global Value Chains (GVCs). Greater reliance on international standards in GVC-intensive sectors can be expected to assist firms in joining value chains, and moving up into higher value added activities that have important spillover effects for the economy at large. The project's substantive potential is set out in graphical form in Figure 1.

Figure 1: Project motivation—from diagnosis to improvement of outcomes



Source: Author

Within this general perspective, the study has four particular objectives:

1. Outline the importance and role of standards related measures (standards, technical regulations, conformity assessment procedures);
2. Review and evaluate the institutional structure (international agreements like WTO TBT/SPS and international organizations);
3. Analyze the current state in the OIC member states in terms of compliance with international standards and assess opportunities and challenges; and
4. Derive practical recommendations and policy options for the Member States.

Against this background, the report proceeds as follows. Section 2 provides substantive background by elaborating on the question of why international product standards matter for OIC member states. The focus is on economic mechanisms, as well as international trade policy realities. Section 3 analyzes the institutions supporting international standards harmonization in OIC member states. It reports the results of a data collection exercise, based on a review of the key issues. It also discusses selected regional initiatives that are of relevance to the OIC's geographically diverse membership. Section 4 comes at the question from a different angle: OIC member states' participation in international standards bodies, focusing on the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Codex Alimentarius Commission. The case studies—three from within the OIC and three from outside—are presented in Section 6. Finally, Section 7 concludes and presents a set of policy recommendations based on the report's findings.

2 WHY DO INTERNATIONAL STANDARDS MATTER FOR OIC COUNTRIES?

This section provides an overview of standards, and highlights the reasons why international standards matter for OIC countries. For a full description of the issues involved in the standards and trade nexus, see Shepherd (2014), upon which this section draws.

2.1 Introduction to Standards and Quality Infrastructure

Standards are documents setting out requirements that products, services, or systems must meet in order to be considered as conforming. Conforming to a standard delivers a benefit in the marketplace, as it signals to the consumer or other user that goods, services, or a company's systems are of a particular level of quality and consistency. This report will focus on product standards, which deal with the characteristics of products. The term product standards is a broad one, covering mandatory and voluntary standards, whether they are issued by a public or private body. As such, the discussion here covers technical regulations, a term used in the WTO agreements to indicate a product standard that is mandatory and issued by a public body.

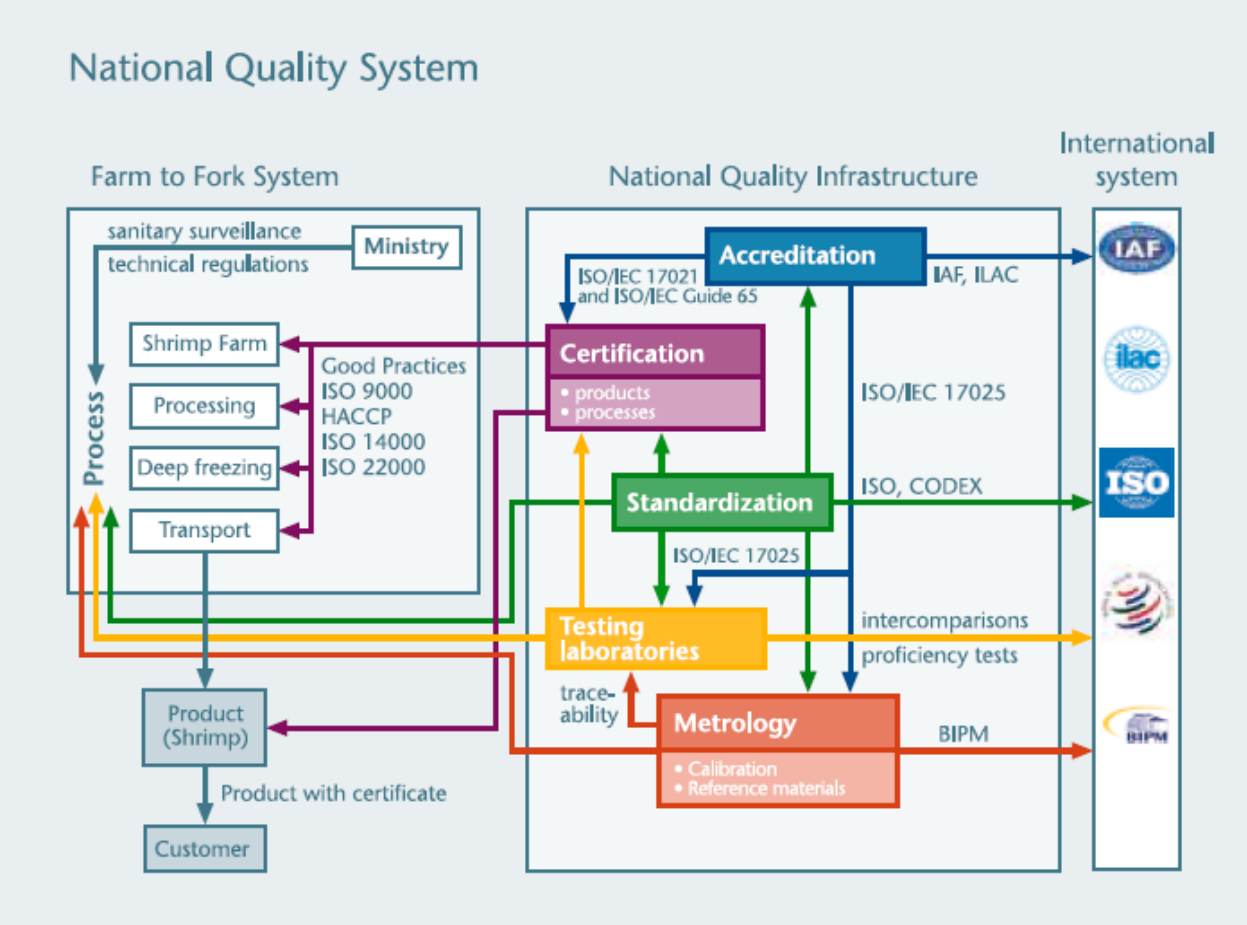
Historically, each country has issued its own standards through national standards bodies, some of which are public sector entities, and some of which are private sector associations. The trend in the developed world is increasingly towards letting the private sector decide on its own standards, except in core areas of regulatory competence such as health, consumer protection, and the environment. Standards designed to meet other needs—such as interoperability of electronics products—are typically a private sector affair.

Another distinction in the standards literature is between mandatory and voluntary standards. A company must comply with mandatory standards before it can sell its goods in a particular market. By contrast, it is free whether or not to comply with voluntary standards from a legal standpoint, even though compliance may be a commercial necessity, particularly when dealing with large distributors (wholesalers and retailers), which need products of consistent characteristics and quality. Again, there is a clear trend in the developed world towards the use of voluntary rather than mandatory standards, because the former leave greater scope for innovation in the market place, and are less cumbersome to update and reform than mandatory standards. So the domain of application of mandatory standards has, in the developed countries, typically shrunk to cover core aspects of health, safety, and consumer protection.

Standards are one part of a country's quality infrastructure. A number of other elements are also necessary to ensure that the standards system works well and is effective in achieving its goals of improving the quality and consistency of production. On the one hand, testing laboratories are needed to

assess whether or not a given product complies with a particular standard (conformity assessment). Those laboratories need to be accredited by a competent agency, which certifies that they comply with the relevant standards governing conformity assessment. Conforming products are often entitled to certification, or application of a mark to their goods, so that consumers can easily distinguish conforming and non-conforming goods. Finally, there needs to be a metrology organization to ensure that measurement is conducted using appropriate instruments, and is performed to an acceptable level of accuracy. Figure 2 presents one overview of the way in which these organizations can work together with a national standards body—which issues standards—to ensure high quality production.

Figure 2: An example of a national quality system



Source: Sanetra and Marban (2007).

2.2 International Standards

Historically, most standards production has taken place domestically, through national standards agencies. The result has been differing national standards, sometimes for sound scientific or environmental reasons, other times simply because of a past accumulation of practice in the marketplace, or historical issues of regulatory design and approach. Divergent national standards add to the costs faced by business, as exporters need to retool and redesign so that their products meet relevant standards in all markets where they operate. The costs for developing country exporters can be particularly high—high enough to keep them out of markets where they might otherwise be competitive. For example, Czubala et al. (2009) show that standards represent a significant barrier to developing country exports of textiles and clothing products to the EU market, and Shepherd and Wilson (2013) find a similar result for the case of agricultural products. Both sectors are of particular importance to developing countries in the early stages of industrialization, which highlights the importance of product standards as a development issue.

It is important to stress that product standards add to both the fixed (paid once) and variable (per unit) costs associated with international trade. Variable cost increases are due to the need for testing and certification, while the investment costs required to redesign a product line to meet a foreign standard can be substantial, even though they are only paid once. In addition, the fixed costs associated with product standards in overseas markets can be particularly high in developing countries, where technical expertise may not be easily available. Shepherd (Forthcoming) shows that product standards in developed country markets can limit the ability of developing countries to diversify their export base because of these kinds of fixed cost issues that impede the ability of firms to introduce new products.

As a result of these factors, divergent national standards have therefore come to be seen as a potential source of trade costs in some cases, and thus as a friction that typically tends to hold back global trade. It is important to highlight that in the vast majority of cases, the aim of a standard is not protectionist. Rather, it is the achievement of a valid regulatory objective, like consumer protection, or protection of the environment. What is emphasized here is the economic effect of the instrument used: the result can be de facto market protection, even when that is not at all the aim of the standard.

Box 1: Empirical Evidence on the Trade Effects of Product Standards

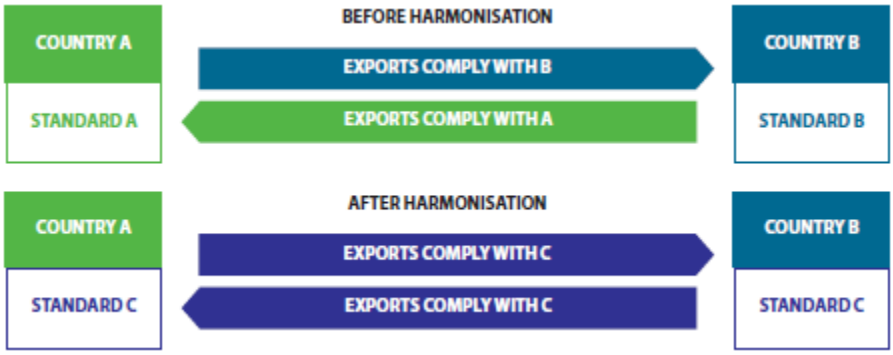
Trade economists have only been able to conduct a limited number of studies quantifying the effects of product standards because of the difficulty of obtaining reliable data for a wide variety of countries. Most often, researchers need to use proxies in the absence of concrete data on standards stocks in different countries, and their inter-relationships (for example, through harmonization). Recent empirical work tends to use data from the WTO, based on country notifications to the SPS and TBT Committees: WTO members are required to notify new mandatory measures in both areas. Moreover, there is scope to identify when other members view a country's TBT or SPS measures as unduly restrictive by analyzing Specific Trade Concerns: standards-related issues raised by an exporting country in relation to an importing country's measures.

A number of research papers, including those cited in the main text, find that product standards in importing markets are typically associated with lower exports from other markets, unless they are harmonized with international standards. Until very recently, these mechanisms were examined using country-level international trade data, which made findings subject to concerns about omitted factors that may be driving trade between countries. More convincing evidence is presented by Fontagne et al. (2015), who use firm-level data to examine the micro-effects of importing country SPS measures, constructed using data on Specific Trade Concerns brought to the WTO SPS Committee. The authors find that SPS measures in importing countries are associated with a lower probability of firms engaging in trade with that country, which is consistent with a mechanism in which product standards like SPS measures mainly serve to increase company fixed costs. In addition, they find that for those firms that do enter the market, their average exports are reduced—which indicates that there are also some variable cost effects. Importantly, the use of firm-level data allows the authors to show that these effects are attenuated for larger firms—so by implication, the burden of foreign standards falls disproportionately on small and medium enterprises (SMEs).

Although protectionist measures like tariffs raise trade costs in a way that can be analogous to some of the effects of product standards, the policy issues that arise in the two cases are quite different: economic logic suggests that tariffs should typically be lowered in order to increase welfare and facilitate market access for exporters; by contrast, standards should not necessarily be "rolled back" in all cases, as their regulatory objective may be valid and important. The issue is therefore how best to design and implement standards so that the benefit/cost ratio is maximized. Typically, this approach means ensuring that standards are not unduly costly to comply with, and represent the most efficient way possible of achieving a given regulatory objective.

One way of dealing with the trade difficulties linked to divergent national standards is to harmonize, i.e. adopt the same standard for two countries or a group of countries. The use of international standards is a special case of harmonization with a wide group—in theory, all of the world that agrees to be part of the international harmonization effort. Under a harmonization strategy, compliance with a single standard gives a firm the ability to access all markets in the harmonization zone (Figure 3). There is substantial empirical evidence that harmonization of product standards lowers trade costs, with consequent gains for exporters: they can export more of existing products, and introduce new products into foreign markets (Czubala et al., 2009; Shepherd and Wilson, 2013; and Shepherd, Forthcoming).

Figure 3: Schematic representation of harmonization



Source: Shepherd (2014).

There is no single body that issues international standards, i.e. harmonized standards that apply in a wide range of countries. Rather, a number of organizations are active in the area. The most well-known is ISO, which has consultative processes and issues standards in a wide variety of areas. For electrical goods, IEC is a commonly used benchmark, again with wide-ranging consultative processes, but a more limited sectoral scope than ISO. Finally, the Codex issues food safety standards that are used as the basis of national standards in many countries, making it another agent of international harmonization of standards.

Regional bodies are also relevant to the standards agenda (see Maur and Shepherd, 2011 for a review). Many new generation regional trade agreements (RTAs) contain provisions on standards. However, a wide range of approaches is in evidence. At one extreme lies the EU, where there is a regional standards body responsible for issuing harmonized standards, and a set of legal directives setting out core requirements for particular products. The other extreme is perhaps the Asia Pacific Economic Cooperation (APEC), a forum that does not use legally binding instruments: instead, member economies have committed to progress international harmonization with particular attention to an agreed set of

sectors. Other initiatives tend to lie between these two extremes, but there is clear scope to move forwards on harmonization—including with international standards—through regional frameworks.

Box 2: Empirical Evidence on Regional Approaches to Standards

Chen and Mattoo (2008) go beyond the analysis of the trade effects of standards to examine two instruments designed to reduce standards-related trade costs: harmonization and mutual recognition. They focus on the European Union, as that is the region where harmonization is the most advanced, and thus where data are most easily available.

Empirical analysis using a set of econometric models shows that harmonization and mutual recognition can both be effective strategies for boosting trade, by implication through mechanisms that reduce the trade costs associated with standards. Harmonization tends to boost trade for the countries that harmonize, but can reduce exports of countries outside the harmonization zone, in particular when the new standard is more stringent than some pre-existing national standards. Mutual recognition is more generally trade promoting, although it interacts with the structure of trade agreements through rules of origin: agreements with restrictive rules of origin tend to see intra-regional trade grow following implementation of mutual recognition, but at the expense of imports from outside the region. That effect is absent in agreements with relatively liberal rules of origin.

In addition to highlighting the potential for coordinated efforts to boost trade in the presence of product standards, this study shows that it is important to situation harmonization and mutual recognition within broader regional integration frameworks. Product standards are only one factor that influences trade between countries, and it is important not to over-emphasize them. At a policy level, the key is to proceed on the basis of a solid understanding of how standards rules interact with trade patterns and trade agreements to produce a beneficial outcome that does not have undue negative effects on excluded countries.

On its own, harmonizing standards is not enough to fully eliminate the costs that arise from divergent national norms. It is also necessary to address the issue of conformity assessment, i.e. procedures for testing goods to see whether they comply with a relevant standard, and potentially issuing a certificate or mark to indicate compliance. Harmonization on its own does not eliminate the usual requirement that imported products undergo conformity assessment procedures in the importing market, typically in addition to any procedures completed in the exporting market. This requirement leads to duplication of testing costs, which can be substantial, particularly when the import market is a developed country where price levels are much higher than in the exporting developing country.

One way of dealing with this problem is through mutual recognition of conformity assessment procedures. In that case, the importing market accepts tests completed elsewhere as equivalent to those conducted locally, so exporters are free to have conformity assessed in their home market, or in a third market, without the requirement for re-testing in the importing market. For example, electrical products produced in Malaysia can be tested there for conformity with international standards and, if conforming, can be exported to Indonesia without re-testing under the ASEAN Mutual Recognition Agreement on electrical and electronic equipment.

Clearly, this approach can be beneficial in combination with standards harmonization, but it requires a high level of trust between regulatory agencies. In addition, it is typically important for testing laboratories in the exporting country to have international accreditation, so that they operate on the same (international) procedures as laboratories elsewhere, an important guarantee as to the reliability of their results. Achieving certification can be very costly for small, low-income countries. As a result, mutual recognition agreements are most often concluded among countries at relatively similar development levels, or in particular cases where there is reason to believe that tests conducted elsewhere are equally valid. Much work is required to upgrade national quality infrastructure before benefitting from mutual recognition on a broad basis can be a realistic policy option in most developing countries.

Many developing countries experience difficulties in taking part in the work of international standardization bodies, due to lack of technical expertise and financial capacity. In some cases, assistance is available, but developing countries typically participate to a lesser degree in international standardization efforts than do their developed counterparts. This asymmetry can give rise to an impression that international standards are made to suit developed country conditions, and may not necessarily be applicable to the very different environments that prevail in developing countries. However, notwithstanding this point, many developing countries are eager to adopt international standards as the basis for their own rules, as they realize that there is a two-fold imperative to do so: WTO rules, and export competitiveness. Both of these factors represent strong reasons why OIC member states should be interested in international standards. They are now addressed in turn.

2.3 WTO Rules on Product Standards

The WTO Agreements deal with product standards under two frameworks: the Agreement on Technical Barriers to Trade (TBT Agreement) and the Agreement on Sanitary and Phyto-Sanitary Measures (SPS Agreement). The former is of general application, while the latter applies to protection of animal and plant life and health, and thus primarily concerns the agricultural sector and food products (which are also covered in some cases by the TBT Agreement).

The WTO Agreements only apply to "measures" under the SPS Agreement and "technical regulations" under the TBT Agreement. Both fields of direct application are therefore limited to mandatory standards. In essence, they require that importing country standards should be non-discriminatory in design and application, and should restrict trade as little as possible. In the case of the SPS Agreement, there is the added requirement that measures should have a scientific basis. Both Agreements fully safeguard the rights of WTO members to pursue legitimate regulatory objectives, such as consumer protection, quarantine and prevention of pest infestation, food safety, and health. In simple terms, the Agreements provide a framework within which members can pursue those objectives in a way that is as compatible as possible with the aims of the multilateral trading system, has minimum negative consequences for trading partners, and as a result entails minimum economic costs for a given level of protection.

Importantly for OIC member states, both Agreements privilege the use of international standards. In both cases, the Agreements require members to use international standards unless good reasons exist for departing from them—reasons that can ultimately be adjudicated upon by the WTO Dispute Settlement Body in the case where a trading partner raises an objection. As a starting point, therefore, countries in the process of building or strengthening their quality infrastructure are well advised to give a significant if not preponderant role to international standards in the interests of ensuring that their measures are in conformity with WTO rules.

The area of voluntary standards—although of high and increasing importance commercially—is not directly governed by the WTO Agreements. However, there are Codes of Conduct for private standards bodies issuing voluntary standards, which incorporate the core WTO disciplines. Application of the Codes is voluntary, and practice differs across WTO member states. In the context of the Doha Round, there have been discussions about bringing private, voluntary standards within the ambit of the WTO, but there is as yet no resolution on this question, and one seems unlikely in the short term. For the moment, then, private standards remain largely outside the WTO system—although there is substantial evidence that they have a significant effect on trade (e.g., Czubala et al., 2009; and Shepherd and Wilson, 2013).

Box 3: Key principles behind standards obligations in the WTO Agreements

The previous discussion and the material in this Box make clear that standards are dealt with in a complex way at the WTO. In some cases, they give rise to legal obligations for national governments, and can become the subject of proceedings under the WTO's dispute settlement procedures. It is important that legal advice be sought in relation to the design and implementation of WTO-compliant national standards systems, as well as the rights and duties attached to the SPS and TBT Agreements. This Box is not a substitute for such advice, but it highlights some of the most important points as an aide-mémoire.

Sectoral coverage: The TBT Agreement applies to all sectors. The SPS Agreement does not indicate a sectoral coverage, but covers only measures applied to: protect animal or plant life or health from pests, or prevent or limit damage from the spread of pests; protect human or animal life or health from additives, contaminants, or disease-causing organisms; or protect human or animal life or health from diseases carried by plants, animals, or related products.

Types of standards covered: The TBT Agreement only directly applies to mandatory standards. It has a voluntary Code of Good Practice for standardisation bodies that are not part of the central government. The SPS Agreement applies to any measure taken to protect human, animal, or plant life or health from certain risks, including contaminants and pests (see Annex A of the SPS Agreement). The Agreement applies to measures adopted by government bodies; in addition, WTO members "shall formulate and implement positive measures" to ensure observance by other than central government bodies (such as local governments), and "take such reasonable measures as may be available to them to ensure that non-governmental entities within their territories" comply with the Agreement.

Right to impose standards: WTO member countries retain the right to impose mandatory standards that affect trade. The SPS Agreement requires SPS measures to be necessary to protect human, animal, or plant life or health, and that such measures are based on scientific evidence. The TBT Agreement requires that mandatory standards be necessary to fulfil a "legitimate objective", such as: national security; prevention of deceptive practices; or protection of human health or safety, animal or plant life or health, or the environment. (The list of "legitimate objectives" given by the TBT Agreement is not exhaustive.)

Non-Discrimination: Under the TBT Agreement, countries when preparing, adopting or applying standards cannot give more favourable treatment to like products from national sources or discriminate between products originating from other WTO members. In the SPS Agreement, arbitrary or unjustifiable discrimination is prohibited with respect to national production or other WTO members, provided that identical or similar conditions prevail.

Protection, not protectionism: The SPS Agreement prohibits standards that are disguised restrictions on international trade, and the TBT Agreement prohibits standards that are more trade restrictive than necessary to fulfil the given objective. SPS measures need to be supported by scientific evidence.

Preference for international standards: The SPS and TBT Agreements both encourage, but do not require, WTO members to use international standards as the basis for their own standards when appropriate. Examples of international standards include those issued by ISO and the CAC.

Transparency: Both agreements set out basic obligations of transparency and communication in the standard setting process. The aim is to ensure that standards are readily available to other members and to the public, their justifications are fully presented, and other members are able to initiate consultations if a standard creates a trade difficulty for them.

Source: Shepherd (2014).

2.4 Product Standards and Export Competitiveness

A second reason why international product standards are important is that they can provide a basis for upgrading export competitiveness in key industries. If important export markets use international standards—particularly mandatory ones—then domestic industries will need to comply with those standards, have their products tested, and have conformity certified before they can enter the export market. Given the widespread use of international standards such as those of ISO, IEC, and the Codex, it is a common requirement for developing country firms to meet international standards as a condition of being able to export to third markets. Having different standards at home puts those firms at a competitive disadvantage in the market, as they need to retool and redesign in order to break into the global marketplace.

More broadly, development of a national quality infrastructure—of which international standardization is one part—can help producers upgrade processes and products to meet the exacting requirements of foreign purchasers. Even voluntary, private standards are important in this regard. Many GVCs require highly standardized inputs to ensure interoperability among components and easy substitution among a network of suppliers. As a result, joining GVCs, particularly in manufacturing sectors, requires local suppliers to have the capacity to meet standards set by the lead firm—which typically rely on international standards as their basis, although there are also some cases of firm-specific standards being used.

In the agricultural sector, raw and processed foods both need to comply with product standards in the importing country. Often, these standards are based on the Codex, i.e. they are international standards.

Developing a productive base for agriculture that relies on international standards can therefore help farmers and food processors break into international markets—a particularly important point for many developing countries, given that agriculture accounts for a substantial share of GDP and employment. In addition, GVC activity is increasing from a low base in the agricultural sector, in particular for "new" agricultural exports like cut flowers and horticultural goods. In such cases, exporters in developing countries need to meet the standards of retailers and distributors in developed country markets. These standards are typically voluntary, but are in some cases based on international standards—an additional rationale for developing international standards capacity.

One example of building up competitiveness through leveraging international standards is African horticultural exports to the EU, particularly the UK (Guasch et al., 2007). In the 1990s, the supermarket industry in the UK underwent a major restructuring, with the net effect that direct relationships started to develop between producers and supermarket chains. This was the beginning of buyer-driven GVCs in the sector. The dynamics of the development meant that supermarket chains were in a position to impose requirements as to quality and presentation on their suppliers. Meeting these standards—at their simplest, international requirements relating to safety, but extending much further than that—became crucial for developing countries in Africa that wanted to export horticultural products to the UK. Although this development clearly posed challenges for African producers, it also provided them with the opportunity to upgrade production to higher quality levels that are reflected in higher prices. At the same time, the new relationship with supermarkets has led to innovation in the value chain, with some African countries now increasingly performing simple, labor-intensive processing tasks in addition to provision of the primary commodity. More recently, these activities have come to include the preparation of ready to eat foods, which requires adherence to high standards of hygiene. Kenya is one of the key actors in this new arrangement: between 1992 and 2013, exports of vegetables increased by over 550% in value terms (based on WITS-Comtrade data). There is scope for OIC countries to mimic this success by developing their own standards system, including by reference to international norms, so as to boost export competitiveness.

Together with the need to ensure WTO consistency and avoid possibly costly disputes, the export competitiveness rationale provides a strong reason for OIC member states to be interested in the development and implementation of international standards. The point is particularly salient for developing countries, where quality infrastructure can sometimes be partial or rudimentary. Even though tariffs in the major developed markets are at historical lows, developing country exporters increasingly need to be able to meet standards in those markets as a condition of achieving real access. The issue is salient in agricultural and manufacturing sectors, including even labor intensive sectors like apparel and clothing. If developing country manufacturers cannot meet foreign standards, they are

effectively locked out of the market. Indeed, even historical market success can be undermined if standards are raised. Building quality infrastructure is therefore a key challenge for developing countries looking to increase their degree of trade integration, particularly through the GVC model. However, as the next box shows, it is important to keep the challenge in perspective, and to recall that it only represents one aspect of an overall export competitiveness strategy.

Box 4: EU Aflatoxin Standards and African groundnut exports

Aflatoxins are naturally occurring substances that pose significant risks to human life and health if they are consumed in sufficiently large amounts. In particular, they pose the risk of cancer. Some products, such as edible groundnuts, can become contaminated with aflatoxins. As is often the case for food safety issues, mandatory standards are used in many countries to limit the level of aflatoxins that can be contained in shipments of groundnuts.

A number of African countries have traditionally exported significant quantities of groundnuts and groundnut products to developed country markets, including the EU. In 1998, the EU adopted new standards limiting the amount of aflatoxins in groundnuts and related products for human consumptions. The new standards were stricter than those established by the Codex Alimentarius Commission—an international food standards body; see further in Subsection 3.1 below—and were seen as a potential barrier to trade by African exporters. Indeed, World Bank research released in 2001 suggested that Africa stood to lose substantial amounts of exports to the EU market as a result of the new standards. Based on a highly stylized model, the World Bank authors concluded that African exports to the EU could decline by as much as 64%, or $670 million.

The overall effect of EU aflatoxin standards remains highly controversial, however. Later work has questioned the approach and findings of the initial World Bank study. In particular, it has highlighted that only a very small quantity of African exports—no more than $1.5 million worth over the 2004-2006 period—was intercepted by EU authorities due to lack of compliance with aflatoxin standards. Moreover, nearly 80% of the intercepted consignments would have failed the less stringent Codex standard in any event.

Although African groundnut exporters have lost substantial market share in recent years, the latest research shows that the challenges posed by aflatoxin standards are just one of the many competitiveness issues that exporters face. The EU, along with other developed country markets, has been on a consistent path of quality upgrading in this sector since at least the 1980s. It has been difficult for African exporters to keep up with the trend.

At the same time, government policies affecting the supply side in African countries have made it difficult for growers and exporters to access important inputs. Groundnuts are just one example of a product in which traditional agricultural policies have not necessarily served African countries well in more recent times. The real issue facing groundnut exporters is therefore one of how to upgrade the whole supply chain to deal with a rapidly evolving marketplace. Standards are only one part of the equation, and arguably not the most important aspect of what needs to be a broad-based upgrading process.

Source: Shepherd (2014).

2.5 Trends in the Use of Standards

There is no global database covering the full range of standards issued by countries, both mandatory and voluntary. It is therefore difficult to track the evolution of the standards environment over time. Anecdotally, the importance of standards is generally acknowledged to be increasing in relative terms as tariffs decline and other market access barriers become more apparent. The rise of GVC production platforms has also given a fillip to the development of private standards in relevant sectors. Similarly, consumers in many markets are becoming more concerned with issues of food safety and quality, which means that standardization activity in agri-business sectors also appears to be increasing.

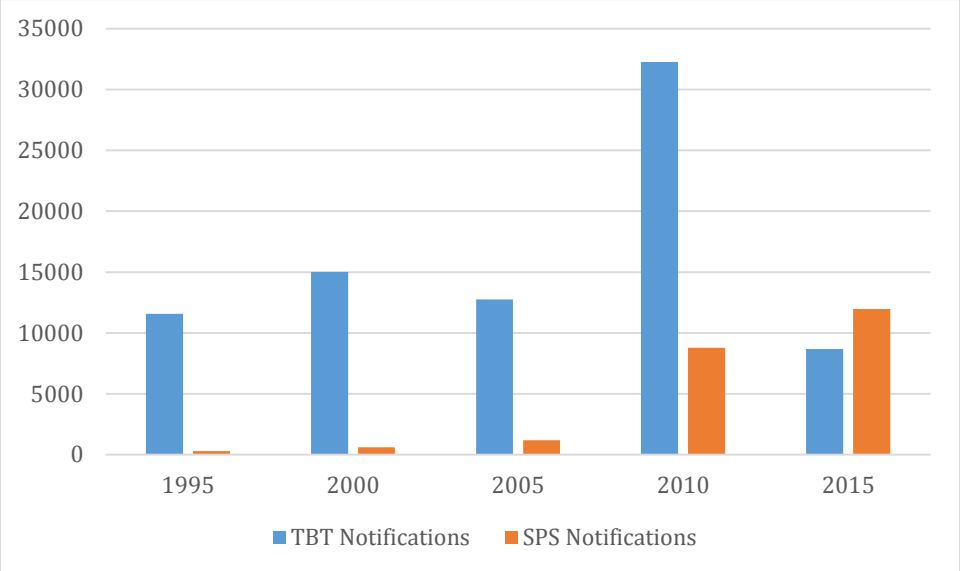
One source that can be consulted to give a partial picture of this dynamic in the standardization environment is the WTO. WTO members are required to notify new SPS measures and TBTs to the relevant WTO committees. Counting these notifications therefore gives a picture of the number of new mandatory standards in these two areas introduced by countries in a given year. It is important to highlight that WTO notifications do not capture private or voluntary standards, but only mandatory public ones. However, there is significant empirical evidence indicating that measures notified to the WTO can have substantial trade effects, so the picture presented here is certainly of relevance to traders in OIC member states.

Figure 4 presents the number of SPS and TBT notifications across all WTO members at five year intervals from 1995 to 2015 (partial coverage due to data lag). The first point that emerges is that WTO members together introduce tens of thousands of new mandatory, public standards each year, covering all sectors. Although data are unavailable, the number of new voluntary private standards is likely to be even higher. The standards playing field is therefore a complex one for companies to navigate, and without measures like harmonization, there is real scope for national standards to unintentionally contribute to trade costs and hold back export growth, particularly in the developing world.

Another point that emerges from the figure is the rapid rise in new SPS measures over time, from a low level compared with TBTs in 1995 to a higher number in 2015. This dynamic surely reflects rising concerns with food safety around the world, but particularly in the large developed markets. This point is of particular concern to OIC members that export, or could potentially export, agricultural products, i.e. primarily the African and to a lesser extent the Asian groups. Exporters in these countries need to comply with a thicket of regulations in import markets that may or may not be reflected in domestic rules. Most notably in small, low income countries, the capacity to do so may be limited, with corresponding negative effects on exports.

By contrast with SPS measures, TBTs are notified at a fairly constant rate except for a bump in 2010. It is important to stress that the numbers in the figure represent growth in TBTs in a given year, and must be related to the stock of TBTs at the starting point, in 1995. With this perspective in mind, it can be seen that companies need to be aware of many thousands of TBTs that potentially impact their ability to export. Navigating this environment is costly and time consuming, and again may pose particular problems for small, low income countries where human, technical, and financial capacity is limited.

Figure 4: SPS and TBT notifications, by year, all WTO members.



Source: Indian Institute for International Trade, based on WTO data.

Although the SPS and TBT notification data speak volumes as to the current dynamics of standardization activities around the world, it cannot be over-emphasized that greater use of standards does not necessarily equate to protectionism. Indeed, in the overwhelming majority of cases, the intent behind the new standards captured in SPS and TBT notifications is not protectionist, but instead dealing with

some market failure that could potentially affect consumer welfare. There is no reliable way to distinguish protectionist from legitimate standards as there is no global data source on legislative purpose, and even if there were, it would be straightforward to present multiple purposes so as to obscure the issue. Even a WTO dispute that results in a ruling against an SPS or TBT measure is not enough to conclude that the measure was protectionist in intent: the WTO approach is typically to bypass the question of intent, to focus on whether or not the measure has a scientific basis (in the case of SPS), or whether a less trade restrictive measure should have been implemented. The most that can be said of SPS measures and TBTs that are successfully challenged before the WTO is that they are inefficient or ineffective, not that they are protectionist in intent. It is important to be aware of this distinction in the context of raising Specific Trade Concerns about particular measures: exporting countries need to emphasize factors that have been found persuasive in the WTO context, not make difficult arguments over intent.

Box 5: The Beef Hormones Dispute at the WTO

Perhaps the best known example of a standards-related dispute at the WTO is the beef hormones case (USA vs. EU). The issue arose because US beef producers often use hormone products that are not authorized in the EU. The EU prohibited the import and sale of meat products containing those hormones. The US brought the issue to the WTO, ultimately seeking the establishment of a Dispute Settlement Panel. Following a first ruling, the issue was then taken to the Appellate Body, which issued a second ruling. Compliance by the EU proved challenging, and the US took retaliatory measure in the interim to try and bring about compliance. The dispute was finally settled by an agreement between the parties that allowed non-treated US beef into the EU market, and permitted the US to apply some additional duties on EU imports.

The substance of the beef hormones case revolved around the interpretation of the SPS and TBT Agreements, as well as parts of the Agreement on Agriculture. The main thrust of the US argument was that the EU measures lacked scientific basis, because they had not been adopted following a thorough risk analysis, and that indeed other risk analyses indicated that the hormone products were safe for human consumption. Significantly, the Appellate Body overturned the Panel's original finding that the EU measure constitute a disguised restriction on international trade, noting that they were based on genuine concerns as to safety. The key finding against the EU therefore related to the absence of a prior risk assessment to support the measures, a point that the EU subsequently sought to remedy, although not to the satisfaction of the US. Ultimately, the case points to sharp differences in consumer preferences between the two markets, as embodied in their standards. The final resolution of the case represented very much a diplomatic solution, as it was seen as politically infeasible for the EU to simply remove its restrictions on hormone treated beef. In the end, the two divergent approaches remain, but those US beef producers that do not use hormones can now access the EU market, so the import prohibition has been slimmed down. The case illustrates the difficulty of distinguishing protectionist motivations from protection of consumers in the context of a concrete standards dispute.

Source: https://www.wto.org/english/tratop_e/dispu_e/cases_e/1pagesum_e/ds26sum_e.pdf.

3 INSTITUTIONS SUPPORTING INTERNATIONAL STANDARDS AND MUTUAL RECOGNITION OF TESTS AND CONFORMITY ASSESSMENT RESULTS IN OIC MEMBER STATES

This section discusses the institutions that support international standards harmonization and mutual recognition of conformity assessment in OIC member states. The first subsection provides an overview of the issues on a conceptual level, along with some typical solutions to the various problems encountered. The last two subsections discuss the current state of play in OIC member states, drawing on answers to questions received as part of this project, and an analysis of regional initiatives involving OIC member states.

3.1 Overview of Issues

As noted in Section 2, standardization is not an issue that can nowadays be considered in isolation from the broader question of national quality infrastructure. There are strong economic and competitiveness rationales for countries to develop that infrastructure, including in collaborative ways with regional partners for small countries, as a way of defraying the major expenses involved. Of course, development of a national quality infrastructure is not just a question of financial resources, but also involves human and technical capacity that is lacking in many developing countries, including OIC member states. The agenda for building national standards and quality capacity is a broad one, covering institutions and agencies, rules and regulations, and links with global and regional institutions and rules.

Supporting international standards can take a variety of forms, depending on the pre-existing institutional and regulatory structures of a country, as well as its technical, financial, and human capacity. For high capacity countries with a relatively strong history of standardization—Turkey is an example in the OIC—the issue is harmonization of national standards with international ones. This process involves a change in regulatory stance. It is also typically accompanied by a movement away from mandatory standards towards voluntary ones in most areas, except core issues of consumer safety, health, and environmental protection. In some countries, such as Egypt (examined in a case study, below) that shift can be challenging as it does not fit with the traditional approach to rule making. There is therefore a learning process that has to be undertaken. Leadership from senior levels of government will be important to provide an impetus to international harmonization in high capacity countries, as well as to manage the political economy issues that arise. For example, no government wants to be seen as relaxing its standards to meet with foreign demands. It is important for leaders to recognize that in many cases, standards are simply different, not stronger or weaker, so it is a question of weighing up the

economic costs and benefits of international harmonization, and then developing a political process that ensures sufficient buy-in from local consumers and producers.

The situation is different in low capacity countries, such as many in the OIC's African group. In these countries, there is little pre-existing culture of standardization, the number of standards issued is small, and quality infrastructure more generally may be in a rudimentary state, and not effective on the ground. In this case, the issue is not, as it is in high capacity countries, bringing divergent national standards into line with international standards. Instead, it is the use of international standards as national standards, by translating them into local languages if necessary, and issuing them as national standards. The process is therefore different: in most cases, there is no prior standard that needs to be amended or repealed before international harmonization can take place. The critical constraint is therefore on the capacity of the national standards body to assess the applicability of international standards to local conditions, and then issue national documents. A further constraint is then the business use of standards on the ground. In low capacity countries, many businesses operate outside formal frameworks, and so are not used to complying with standards at all. A major shift is necessary to ensure that new internationally harmonized standards are in fact used by business.

An issue that is related to international harmonization of product standards is mutual recognition of test results and conformity assessment procedures. Even if a standard is harmonized, there need to be procedures in place to ensure that products tested and found to be conforming in one country are recognized as such in another country, without the need for costly retesting. Conceptually, two approaches are open: mutual recognition, in which two or more countries agree to recognize each other's conformity assessment procedures, and unilateral recognition, in which one country decides to accept results from elsewhere under certain circumstances. Both approaches eliminate the need for testing in both the exporting and importing countries, and therefore can save costs for business. However, experience around the world suggests that mutual recognition agreements are typically difficult to negotiate on a sufficiently broad basis: proceeding by country pair means that countries have to invest major time and resources in ensuring that their goods can easily move to all key markets. Such an approach may be outside the financial, human, and technical capacities of smaller developing countries, which makes the unilateral approach potentially appealing. Similarly, there is scope for groups of countries to progress on mutual recognition, perhaps in tandem with development of internationally harmonized standards on a regional basis. The two do not always go together, but it is a pairing with some conceptual appeal and concrete economic interest. The remainder of this section discusses the ways in which these ideas are put into effect in OIC member states at the present time.

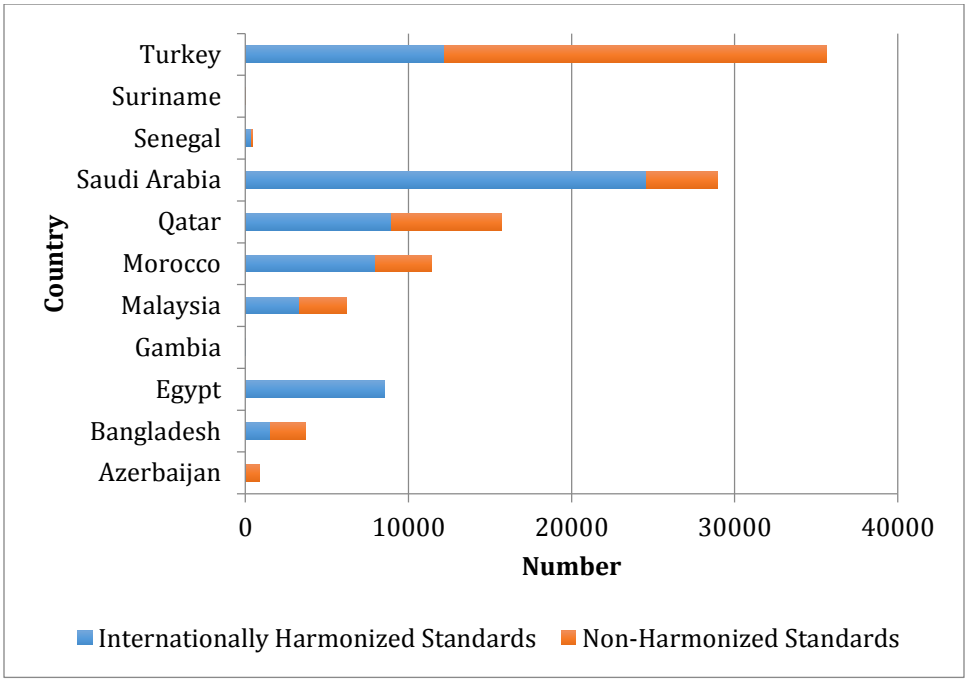
3.2 Current State of Play

The available data suggest that OIC members take markedly different approaches to standardization and harmonization, based on regional considerations and level of development. Figure 5 shows the number of internationally harmonized standards and non-harmonized standards in OIC members that responded to inquiries for this project. The first point to note is the vast gap between the most developed standards infrastructures, like Turkey with over 35,000 standards and Saudi Arabia with nearly 30,000, and the small, less developed countries like the Gambia, with only 10 standards, or Suriname with 22.

The second point to note is that the degree of harmonization differs substantially across countries, from a low of just under 5% in Azerbaijan, to highs of 100% in Egypt (as of 2010) and the Gambia. Despite the wide range, the OIC countries for which data are available typically make extensive use of internationally harmonized standards. There is room to boost performance in most countries, but from a reasonably strong baseline. Given issues of applicability in different climactic, geographical, and developmental contexts, it is to be expected that the rate of harmonization might be less than 100% in most countries. Nonetheless, the countries for which data are available are clearly making good use of internationally harmonized standards.

Third, it is important to be aware of the fact that some countries, like Egypt and Senegal, allow goods into their markets if they comply with international standards and there is no applicable local standard. This is an added dimension of international standards harmonization that is important in at least some OIC member states. It has the potential to boost trade by facilitating imports of compliant goods, in particular in low capacity countries where the total number of standards is small. Suriname is a good example of this dynamic: it is a very small, upper middle income country that lacks the ability to issue standards in all sectors relevant from a consumption and input use point of view. It therefore allows imports that comply with international standards, on the basis that there is a broad international consensus to the effect that such goods are safe and fit for purpose, in the case where there is no local standard in force.

Figure 5: Standards harmonization in selected OIC countries, latest available year



Source: National standards bodies.Note: Data not available for other OIC member states. Internationally harmonized is limited to equivalence with ISO, IEC, or similar international standards. Harmonization with EU CEN standards is not treated as international harmonization, because the standards in question are regional rather than global. Only standards actually in force as of writing are included in the analysis.

3.2.1 Conformity Assessment and Mutual Recognition

In addition to international harmonization, the issue of mutual recognition of conformity assessments is also important, for the reasons set out above. Again, practice in this area differs substantially from one OIC member state to another, based on the countries for which data have been made available as part of this study. Some countries, like Morocco (eight) and Saudi Arabia (21) have signed mutual recognition agreements with third parties, so that goods that conform with international standards are not subject to costly retesting upon entering the local market. Azerbaijan has similarly signed ten agreements on standards cooperation, but limited to its immediate region. Turkey is the most active country, with 120 mutual recognition agreements signed. Similarly, Malaysia is a part of regional mutual recognition arrangements (see further below in the case studies of APEC and ASEAN). Qatar plots a middle course: the country has not signed any mutual recognition agreement, but in practice, it typically accepts test results issued by a laboratory certified in accordance with ISO standards. At the other end of the spectrum, the Gambia does not have any mutual recognition agreements, nor does it have a de facto recognition procedure in place like Qatar.

There are a number of potentially useful points of practice that come from the varying experience of OIC member states with mutual recognition of conformity assessment. First, although agreements are desirable, they are not necessary, as the interesting case of Qatar demonstrates. For small economies, there is much to recommend the Qatari approach of according unilateral recognition to laboratories of international standard. This approach should be attractive to those OIC member states that do not have any, or many, mutual recognition agreements.

The second point that emerges strongly is the regional dimension, for countries like Malaysia and Senegal. Both regions—the Asia-Pacific and West Africa—have initiatives on testing and certification, although they are much better developed in the first region than in the second, where they are as yet nascent. The regional approach has much to commend it, in particular for small, developing countries. Some OIC countries do not have large populations or economies, and therefore attract only small import volumes in global terms. There may not be sufficient business to keep testing laboratories profitable in a competitive environment, in particular given the costs of acquiring accreditation from an appropriate organization. Proceeding regionally can offer a way past these kinds of difficulties, as it effectively allows countries to pool resources. Laboratories can serve a number of countries instead of just one, thereby benefitting from economies of scale and, potentially, scope. Although it has been difficult to get the system off the ground in West Africa, the Asia Pacific example is instructive: higher income countries can use regional arrangements as a vehicle for the delivery of technical assistance and capacity building to less developed countries in the region. There is clear scope for the more advanced OIC countries to play a leadership role in this area, in terms of developing unilateral and mutual recognition arrangements in the context of regional standardization efforts in the developing world.

3.3 Regional Initiatives

As the previous subsection and the case studies in Section 6 make clear, OIC member states are involved in various regional initiatives in the area of standards. For the Asia-Pacific, the relevant structures are analyzed in the case studies of ASEAN and APEC, two groups that include OIC member states. For Egypt, there are the various regional integration initiatives in the Arab region, such as PAFTA, which requires action on non-tariff barriers including product standards that fall into that category. Similarly, for Senegal there is the ARCO initiative on African standards, as well as UEMOA work on harmonization in the West African sub-regional context. Finally, for Bangladesh there is SARSO, a specialized body of the relevant regional integration organization dealing with standards issues. As these examples show, OIC member states in all country groups are variously involved in regional initiatives, more or less developed, dealing with standards. One notable initiative is the GCC Standardization Organization (GSO), an initiative of the Gulf Cooperation Council (GCC) states, which are also OIC member states. The GSO is active in a number of areas relevant to international standards. On the one hand, it has a number of

technical committees that produce harmonized standards in areas of economic interests to GCC states. It has also made some progress in the area of conformity assessment, although sectoral scope is as yet limited. The GSO coordinates with a regional accreditation body, an example of the need for a common approach among organizations involved in quality infrastructure.

In light of the analysis that will come later, this subsection focuses on one key initiative of interest to OIC member states: the Standards and Metrology Institute for the Islamic Countries (SMIIC). The SMIIC was established in 2010, after a long ratification period. Although it operates under the auspices of the OIC, not all OIC member states have accepted to become members of the SMIIC. Currently, 32 OIC members are also members of the SMIIC.[1] The Institute's mandate is a broad one, being, in essence, to help develop quality infrastructure among OIC member states, including through the promotion of harmonization, as well as various other aspects of quality policy. In particular, it is charged with responsibility for developing OIC/SMIIC standards that should, in addition to harmonization, form the basis of metrology and accreditation activities in OIC member states.

In the area of standardization, the SMIIC has seven technical committees: Halal food issues, Halal cosmetic issues, service site issues, renewable energy, tourism and related services, agriculture processes, and transportation. It has designed its committee structure to be compatible with ISO and CEN, and has reached out to work cooperate with these and other organizations. Its sectoral focus is narrower than that of generalist international standardization organizations like ISO, but broader than those with specialist remit, such as IEC. Based on an analysis of the SMIIC's website, it has currently only three harmonized standards in force, all dealing with Halal food issues. Although clearly an important subject for consumers in OIC member states, as well as a potential source of export competitiveness in destination markets with populations that consume Halal food, including Europe, the number of standards is small relative to the total number of active standards in most OIC member states for which data have been made available as part of this study. However, the SMIIC as clearly filled a standardization gap in the sense that Halal issues are not dealt with by generalist standards organizations.

The SMIIC is also active in the areas of metrology and accreditation. In terms of metrology, there is a specialized committee where members can exchange views on issues of mutual interest. In particular, one key objective is to promote an internationalized mutual recognition agreement issued by the CIPM, an international metrology body. The committee intends to play a leadership role for members with respect to upgrading quality infrastructure, and obtaining ISO accreditation. This approach shows that the ways in which quality infrastructure has been elaborated at the international level are key to the

[1] http://www.smiic.org/smiic-members.

SMIIC's work on metrology, in addition to its standardization program. Besides these programs, the SMIIC also has an accreditation committee. It aims to carry out work with the objective of establishing an accreditation scheme in OIC member states.

The general picture that emerges of the SMIIC's work to date is that it is a potentially useful initiative for OIC member states, in particular as it is committed to working towards broader international harmonization goals. However, it is still a young organization, and progress to date has been limited in areas other than Halal food standards. A review of the SMIIC's documentation suggests that the body is still establishing its work program, and identifying areas of concrete overlapping interest of member states. As that work proceeds, it is to be hoped that the development of internationally harmonized quality infrastructure will remain a cornerstone of the organization's work, both through standardization and otherwise. OIC member states will be able to leverage the SMIIC as a forum for discussion and exchange of views and experiences on issues of common interest. It could form part of an array of regional initiatives countries can leverage in their efforts to upgrade quality infrastructure, including through international harmonization and mutual recognition of conformity assessments.

4 ANALYSIS OF OIC MEMBER STATES' PARTICIPATION IN INTERNATIONAL STANDARDS ORGANIZATIONS AND INSTITUTIONS

Numerous international bodies are active in the area of standards. Three areas stand out as providing a categorization of efforts in this regard: standardization, metrology, and accreditation. This section will present background information on the major international bodies active in these areas, and characterize the extent of OIC member states' participation in them.

4.1 Standardization

International standards bodies are primarily responsible for standardization at the international level. Some of them are general in extent, in the sense that they deal with multiple sectors of economic activity. ISO is the most obvious and important example. Others, by contrast, have a particular focus, such as electrical products (IEC) or food safety (the Codex). All international standardization bodies have in common that they issue norms that can then be adopted by national standards bodies. They do not directly make national standards, except in two limited cases. One case is that of certain regional bodies like CEN for the EU: issuance of a CEN European Standard requires national authorities to withdraw conflicting standards, and issue the CEN standard as a national norm. The second case, of more practical importance to OIC member states, is when a country's own legislation provides for the use of international standards in cases where there is no applicable domestic standard, or as an alternative to domestic standards. Such approaches are used in numerous countries, particularly those where the

development of quality infrastructure is in the relatively early stages, and there is no capacity to issue the large number of standards required to cover the field in terms of national economic activities. The case studies in the next section show that some OIC member states use this approach.

International standards organizations have a difficult task, in that their standards need to be applicable in a wide range of contexts. Countries differ markedly in terms of their level of economic development, consumer preferences in relation to various issues, level of industrialization, not to mention institutional and cultural factors. For this reason, it is important for countries to participate actively in the work of international standards bodies, so that the resulting norms can be applicable to their particular circumstances. However, participation represents a particular challenge for developing countries, especially those where national quality infrastructure is at an early stage of development and standardization is not well advanced at the national level. There can be serious constraints in terms of human, technical, and financial capacity when it comes to the participation of countries—typically through national standards bodies or government representatives—in international standards bodies like ISO, IEC, and the Codex. As a result of these constraints, developing countries sometimes claim that international standards are unduly focused on the conditions prevailing in developed countries, which constitute the bulk of the active members of the relevant committees where the standards are drafted.

Table 1 sets out the current state of play with respect to OIC member states' participation in the main international standards bodies, namely ISO, IEC, and the Codex. It is not possible to cover all international standards bodies in this report, so it was decided to focus on those that are most active in domains of interest to a broad cross-section of OIC member states, either from a production or consumption perspective.

It is immediately clear from Table 1 that even at the level of membership, as distinct from active participation, positions differ greatly from one OIC member state to another, and from one international standards organization to another. For example, all but two OIC member states (Somalia and Palestine) are members of the Codex, so at least in formal terms, they have the ability to take part in deliberations on international food safety standards. By contrast, only 11 OIC member states are full members of IEC, so the ability of the remainder of the Organization's membership to have a voice in the development of international standards for the electrical products industry is severely limited.

In the case of ISO—which has the broadest sectoral scope of any of the international standards organizations considered in Table 1—the evidence is more mixed. 35 OIC member states' standards organizations are member bodies of ISO, with the right to take full part in its deliberations and standards development activities, including voting on the adoption of standards. Another 13 countries

are correspondent members—effectively observers, with the right to attend meetings, but not to vote on adoption of ISO standards. Only nine OIC member states have no relationship with ISO at all.

However, it is important to dig further into the available information to examine the real and effective extent of different countries' participation in ISO's deliberations on standards. ISO's work largely takes place in Technical Committees (TCs), each of which has a particular sectoral scope. Participation in these bodies is crucial if a country is to weigh in effectively on the content of ISO standards. Here, Table 1 shows that there is a wide variety of effective participation by OIC member states. Iran participates in 518 committees, Turkey in 391, Egypt in 310, and Indonesia and Malaysia in over 200. The most active ISO members, like France, the UK, Germany, China, South Korea, and Japan all participate in over 700 committees, so even the leading OIC member states are clearly being somewhat selective in their ISO participation.

At the other end of the spectrum, Guyana, the Kyrgyz Republic, Niger, Suriname, and Turkmenistan do not take part in any Committees, so even though they have a relationship with ISO, their ability to make their concerns felt during the development phase of international standards is extremely limited. The same is true for a range of other countries that participate in very few committees, presumably in sectors of greatest economic interest to them. The evidence in Table 1 suggests that real and effective participation in the international standardization process—as opposed to membership of the relevant organizations—is a significant problem for many OIC member states, particularly those at lower income levels. As previously noted, such countries also have the constraint of technical capacity to deal with: even if they see the economic interest in participating in a particular committee, they may lack personnel with sufficient technical knowledge to properly advance the country's interests.

Given the reliance that some OIC member states place on international standards within their own quality infrastructures, it is striking that some are not in a position to exercise effective influence over the development of those same standards. There is therefore a real risk that international standards may not adequately reflect conditions prevailing in lower income OIC member states. It will be important to examine ways of supporting the participation of those countries in the work of international standards bodies, looking beyond membership to real and effective participation. To do that, it will be necessary to deploy technical assistance and capacity building among national standards bodies within the OIC. There is a clear role for those countries with higher income levels and more developed national quality infrastructure to share experience with other countries and support them in their efforts to take part in international standardization.

Alongside the issue of participation in ISO's Technical Committees is that of its Policy Development Committees (PDCs), also noted in Table 1. Where TCs develop standards in particular sectors, PDCs deal

with issues of more general significance, including economic development. There are far fewer PDCs than TCs, with the most active ISO members—including OIC member states—taking part in three. However, a number of OIC member states only take part in one PDC, which indicates that their ability to exercise an influence on the general policy issues that ISO is confronted with is limited. Again, there is the risk that the organization's work is oriented more towards policy issues in the countries that participate most actively in these committees, potentially to the exclusion of lower income developing countries. Issues of human, financial, and technical capacity are key. However, in relative terms, developing OIC member states' participation in PDCs is stronger than for TCs—perhaps reflecting the fact that detailed sectoral knowledge in areas like engineering is less of a prerequisite, as the issues that arise are more policy-centered. Nonetheless, there is still scope for technical assistance and capacity building to boost the participation of the least active countries.

Table 1: OIC member states' participation in selected international standards bodies.

Country	Membership						
	ISO			IEC			Codex
	Membership type	TC participation	PDC participation	Membership type	P-Member	O-Member	
Afghanistan	Member body	5	1				Member
Albania	Correspondent member	5	3				Member
Algeria	Member body	65	3				Member
Azerbaijan	Member body	11	3				Member
Bahrain	Member body	11	2	Associate member			Member
Bangladesh	Member body	22	2				Member
Benin	Member body	1	1				Member
Brunei Darussalam	Correspondent member	6	3				Member
Burkina Faso	Member body	2	1				Member

Cameroon	Member body	35	3				Member
Chad							Member
Comoros							Member
Cote d'Ivoire	Member body	54	2				Member
Djibouti							Member
Egypt	Member body	310	3	Full member	83	7	Member
Gabon	Member body	9	3				Member
Gambia	Correspondent member	4	2				Member
Guinea							Member
Guinea-Bissau							Member
Guyana	Correspondent member	0	1				Member
Indonesia	Member body	228	3				Member
Iran	Member body	518	3	Full member	9	82	Member
Iraq	Member body	39	3	Full member	6	1	Member
Jordan	Member body	34	3	Associate	3	1	Member

				member			
Kazakhstan	Member body	86	3	Associate member	4		Member
Kuwait	Member body	14	2				Member
Kyrgyz Republic	Correspondent member	0	1				Member
Lebanon	Member body	27	3				Member
Libya	Member body	36	3	Full member			Member
Malaysia	Member body	285	3	Full member	30	73	Member
Maldives							Member
Mali	Member body	16	3				Member
Mauritania	Correspondent member	4	1				Member
Morocco	Member body	99	3				Member
Mozambique	Correspondent member	8	3				Member
Niger	Correspondent member	0	1				Member
Nigeria	Member body	54	3	Associate	2		Member

				member			
Oman	Member body	24	3	Full member	2	25	Member
Pakistan	Member body	172	3	Full member	66	6	Member
Palestine	Correspondent member	12	3				
Qatar	Member body	37	3	Full member		1	Member
Saudi Arabia	Member body	197	3	Full	5	21	Member
Senegal	Member body	7	3				Member
Sierra Leone	Correspondent member	5	2				Member
Somalia							
Sudan	Member body	12	2				Member
Suriname	Correspondent member	0	2				Member
Syria							Member
Tajikistan	Correspondent member	10	1				Member
Togo							Member

Tunisia	Member body	166	3	Associate member	4		Member
Turkey	Member body	391	3	Full member	29	66	Member
Turkmenistan	Correspondent member	0	1				Member
Uganda	Member body	39	2				Member
United Arab Emirates	Member body	32	3	Full member			Member
Uzbekistan	Member body	7	2				Member
Yemen	Member body	13	1				Member

Source: Author

4.2 Metrology

A number of international organizations are active in the metrology domain. The two most important are the Bureau International des Poids et Mesures (BIPM; International Bureau of Weights and Measures), and the International Organization of Legal Metrology (OIML).

The BIPM is an international organization established by convention. Its core area of expertise is measurement science and measurement standards, a necessary underlying feature of any standards and quality system. Its mission is: "to ensure and promote the global comparability of measurements, including providing a coherent international system of units for: scientific discovery; industrial manufacturing and international trade; and sustaining the quality of life and the global environment". The organization acts deliberatively as well as scientifically. It is responsible for developing the technical and organizational infrastructure of the International System of Units (SI), which serves as the basis for the global traceability of measurements. It has its own laboratories where it undertakes measurement science activities that are best conducted at the international level, rather than in a decentralized fashion in individual countries. In terms of its standardization activities, the BIPM focuses on norms relating to the act of measurement itself, such as the definition of units of measurement, and the development of appropriate techniques for conducting globally acceptable measurements. This function is an important one in the context of broader standardization activities: it is only possible to assess conformity with a substantive product standard if there is pre-existing agreement on issues of measurement. Participation in the organization is therefore an important step in the development of national quality infrastructure that takes accounts of developments in the international sphere.

The OIML's mission "is to enable economies to put in place effective legal metrology infrastructures that are mutually compatible and internationally recognized, for all areas for which governments take responsibility, such as those which facilitate trade, establish mutual confidence and harmonize the level of consumer protection worldwide." Also established by international treaty as a governmental organization, the OIML takes responsibility for the development of standards and other documents for use by metrology organizations. It also serves as a forum for exchange within the global metrology community, and facilitates information sharing and experience-based learning. In addition, it provides mutual recognition systems designed, among other objectives, to facilitate trade. Like the international standardization bodies examined above, the OIML issues documents for its members, but implementation is not strictly mandatory as a matter of law; technically, members are "morally obliged" to implement International Recommendations, which are intended as model regulations. By contrast, International Documents are completely non-binding and are intended for informational purposes only. Of most interest in the present context is the OIML's work on developing standards for measuring instruments, as well as model documents for mutual recognition of test results based on a standardized

approach to measurement. As is the case for the BIPM, the OIML is part of the underlying infrastructure of international standardization, and plays a key role in facilitating the development and implementation of international standards.

Table 2 sets out the current state of play with respect to the participation of OIC member states in these two main international metrology bodies. In relation to the BIPM, only 11 OIC member states are full members, with a further seven enjoying more limited benefits (but lower costs) as Associate Members. For the OIML, participation is somewhat stronger, but focused on the corresponding member category (21, compared with 12 full members). In both cases, there is some risk of marginalization for those OIC member states that do not have a full relationship with these two important organizations. Metrology forms the basis for much standardization activities, so it is important to find ways for OIC member states to have a more significant voice in both organizations. Although corresponding or associate membership is beneficial in terms of keeping abreast of an organization's work, it does not come with full voting rights, so such members are limited in their ability to influence the deliberations of the international metrology organizations. Indeed, a number of OIC member states have no relationship with either organization, so they are completely cut off from their work. The contrast with the standardization organizations is striking, as there is typically a higher level of OIC involvement (albeit in a limited number of Technical Committees, in most cases, for the ISO). Clearly, there is room for OIC member states to develop a more active presence in the global metrology community.

Table 2: OIC member states' participation in selected international metrology organizations

Country	BIPM	OIML	Country	BIPM	OIML
Afghanistan			Guyana		
Albania	Associate	Member	Indonesia	Member	Member
Algeria		Member	Iran	Member	Member
Azerbaijan	Associate	Corresponding Member	Iraq	Member	Corresponding Member
Bahrain		Corresponding Member	Jordan		Corresponding Member
Bangladesh	Associate		Kazakhstan	Member	Member
Benin		Corresponding Member	Kuwait		Corresponding Member

Brunei Darussalam			Kyrgyz Republic		Corresponding Member
Burkina Faso			Lebanon		
Cameroon		Member	Libya		
Chad			Malaysia	Member	Corresponding Member
Comoros			Maldives		
Cote d'Ivoire			Mali		
Djibouti			Mauritania		Corresponding Member
Egypt	Member	Member	Morocco		Member
Gabon		Corresponding Member	Mozambique		Corresponding Member
Gambia		Corresponding Member	Niger		
Guinea		Corresponding Member	Nigeria		Corresponding Member
Guinea-Bissau			United Arab Emirates	Member	Corresponding Member
Oman	Associate	Corresponding Member	Uzbekistan		Corresponding Member
Pakistan	Member	Member	Yemen	Associate	Corresponding Member
Palestine					
Qatar					
Saudi Arabia	Member	Member			
Senegal					

Sierra Leone		Corresponding Member			
Somalia					
Sudan	Associate	Corresponding Member			
Suriname					
Syria	Associate	Corresponding Member			
Tajikistan					
Togo					
Tunisia	Member	Member			
Turkey	Member	Member			
Turkmenistan					
Uganda					

Source: Author

4.3 Accreditation

As noted above, another important aspect of quality infrastructure is accreditation, the process by which laboratories are recognized as producing reliable test results for use in conformity assessment. As for standardization and metrology, there is also an international accreditation community that influences developments at the national level.

Two international organizations are of particular interest from the point of view of accreditation. The first, the International Accreditation Forum (IAF), manages accreditation arrangements in areas including product standards, with a broad remit in terms of conformity assessment. The IAF has two primary purposes: to ensure that its accreditation body members only accredit qualified bodies with no conflict of interest; and to establish mutual recognition arrangements between accreditation bodies. The underlying motivation for the IAF is that it is trade facilitating to put in place a system whereby accreditation certificates issued in one country are recognized in others, having been granted on the basis of agreed standards and procedures. As noted elsewhere in this report, standards and conformity assessment are intimately related, and just as international product standards can reduce trade costs, so too can streamlined accreditation arrangements.

The second body of particular importance is the International Laboratory Accreditation Cooperation (ILAC). Unlike the IAF, the ILAC deals with the narrower issue of laboratories and testing. Specifically, its mandate is to develop and harmonize laboratory and inspection accreditation practices, as well as to promote these practices with governments. In addition, the organization has developed the ILAC Arrangement, which provides for global recognition of laboratories and inspection facilities. Work in these areas is important in the context of broader efforts to promote mutual recognition and testing results and conformity assessments, an important measure that can ensure the benefits of harmonization are felt most fully.

Table 3 shows OIC member states' participation in international accreditation bodies. The level of membership is higher in ILAC (21) than IAF (11). This point is of some concern in light of the fact that the IAF has a broader remit than the ILAC, and deals generally with conformity assessment procedures as opposed to the narrower question of laboratories and testing. Accreditation is an important part of the standards infrastructure, and the relatively light participation of OIC member states in these organizations is again to be contrasted with the more generalized membership of organizations like ISO and the Codex. In fact, development of a standards and quality infrastructure that is in line with international best practice, and thus poised to enable traders to best take advantage of the opportunities offered by harmonized standards, depends in part on development of an appropriate accreditation framework. This is an area where increased attention will be needed in the coming years.

Table 3: OIC member states' participation in selected international accreditation organizations

Country	IAF	ILAC	Country	IAF	ILAC
Afghanistan			Libya		
Albania	Member	Member	Malaysia	Member	Member
Algeria		Member	Maldives		
Azerbaijan		Member	Mali		
Bahrain			Mauritania		
Bangladesh		Member	Morocco	Member	Member
Benin			Mozambique		
Brunei Darussalam			Niger		
Burkina Faso			Nigeria		Member
Cameroon			Oman		
Chad			Pakistan	Member	Member
Comoros			Palestine		
Cote d'Ivoire			Qatar		

Djibouti			Senegal		
Egypt	Member	Member	Sierra Leone		
Gabon			Somalia		
Gambia			Sudan		
Guinea			Suriname		
Guinea-Bissau			Syria		
Guyana			Tajikistan		
Indonesia	Member	Member	Togo		
Iran	Member	Member	Tunisia	Member	Member
Iraq		Member	Turkey	Member	Member
Jordan		Member	Turkmenistan		
Kazakhstan	Member	Member	Uganda		
Kuwait			United Arab Emirates	Member	Member
Kyrgyz Republic		Member	Uzbekistan		
Lebanon		Member	Yemen		Member
Saudi Arabia		Member			

Source: Author

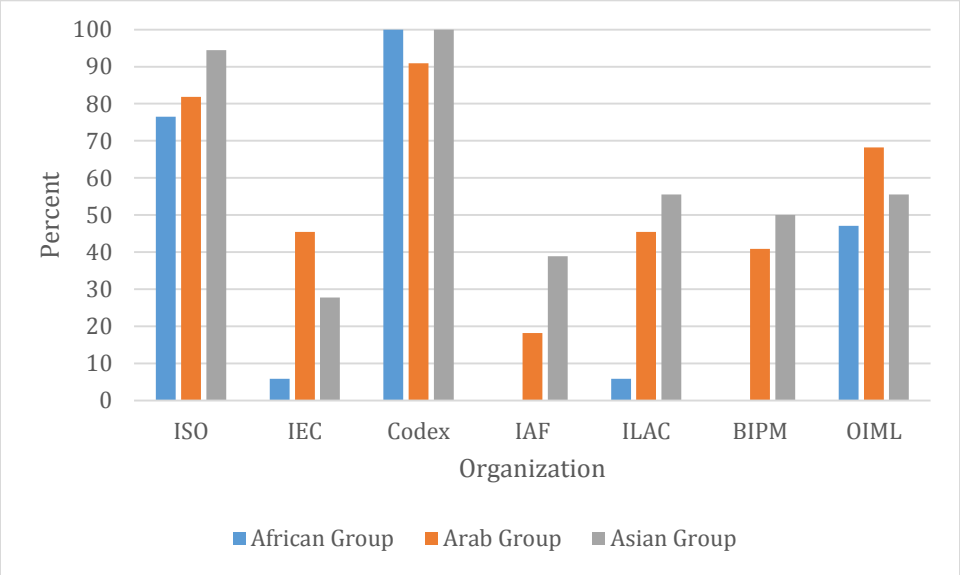
4.4 Breakdown by Region

The preceding parts of this section have examined the participation of OIC member states in various international standards organizations. It is useful to break down those results by region, so that different patterns can be discerned. Figure 6 presents results. The first point that is evident is that across all regional groupings, the ISO and the Codex have the greatest degree of participation among OIC member states. This result is in line with their importance in the international standards system. However, the contrast with the accreditation and metrology organizations is sometimes striking—a point that suggests that these areas may be deserving of greater relative attention in the figure, given that they represent an important part of standards and quality infrastructure.

The second point to note is that there is considerable variation in participation rates across OIC regions. In general, the African group participates to a noticeably lesser degree than the Asian and Arab groups. This result no doubt flows, at least in part, from the difficulties small, low income countries face in taking part in the work of international standards organizations. Nonetheless, the need for technical and financial assistance to support African participation in standards organizations is clear. Without this support, there is a real risk that developments in the broad international standards community will not

adequately reflect African realities, as these countries are unable to have an effective voice in proceedings.

Figure 6: Percentage of OIC regional group members that participate in selected international standards organizations



Source: Organization websites. Note: Participation is taken as including correspondent and associate membership.[2]

4.5 Supporting the Participation of Developing Countries in International Standard Setting

International standards organizations typically have technical assistance and capacity building programs available for developing countries, with the aim of increasing their participation in the standard-setting process. In addition to agency specific programs, a number of multilateral efforts are also relevant (Shepherd, 2014). The multi-agency Standards and Trade Development Facility provides financial assistance for standards-related projects in developing countries. In addition, UNIDO has programs to support the development of quality infrastructure in developing countries, and the Enhanced Integrated Framework supports LDCs in this area.

[2] In addition to the organizations listed here, Turkey is also a member of the European standards body CEN. As a full member of CEN and CENELEC (European standardization institutions), Turkish Standards Institute (TSE) had harmonized 98% of the EN standards. In addition to 3,469 ISO and 228 IEC standards, 18,385 European Standards (CEN, CENELECE) were also adopted as Turkish Standards by TSE.

To examine the question of enhanced participation in greater detail, it is useful to explore the example of ISO.[3] ISO is conscious of the need to involve developing countries in its processes, as they account for over three quarters of its total membership. Its actions in this area are guided by its Action Plan for Developing Countries. ISO has country specific programs, including in collaboration with other agencies like UNIDO. The ISO Academy offers training programs in areas relevant to standards development. In addition, it facilitates twinning arrangements, where developing country standards professionals work with their counterparts in developed countries. ISO's PDC on Developing Countries provides a forum for discussing development-related issues. Supporting individual developing country delegations in their participation in ISO's work relies on external donors for financing, and so is undertaken on a case by case basis.

5 STANDARDS AND OIC MEMBER STATES' EXPORTS

The main focus of this report is on standards infrastructure in OIC member states. However, an important part of the more general set of issues surrounding standardization and trade relates to the position of OIC member states' exports. Specifically, it is useful to examine the extent to which standards issues crop up as measures that potentially hold back OIC member states' exports both intra- and extra-regionally.

The analysis presented in this section, which looks at the standards faced by OIC member states in import markets, cannot make any claim to universality. The reason is twofold. First, the OIC is a diverse grouping, with countries at different development levels, in different climactic zones, and with different levels of sophistication when it comes to product development and standards. Second, there is no global data source that maps the entirety of the world's population of standards and related measures. Existing data sources are piecemeal, both in terms of the countries they cover and, most importantly, the types of standards. Up to date data are only available for mandatory standards (SPS measures and technical regulations), not voluntary standards, as there is no comprehensive source on the latter. The analysis presented here therefore focuses on what is feasible in terms of the existing data, which is essentially SPS measures and technical regulations.

Concretely, this section uses two data sources. The first one is CEPII's NTM Map database, created using data from UNCTAD's TRAINS system. NTM Map provides comprehensive information on SPS measures and technical regulations—mandatory standards in both case. It covers 71 countries, counting the EU as 29 (28 member countries plus the EU as a distinct entity); unfortunately, it does not currently cover the USA. NTM Map uses TRAINS data on SPS measures and TBTs to construct indicators of their incidence.

[3] http://www.iso.org/iso/home/about/training-technical-assistance.htm; http://www.iso.org/iso/home/about/iso-and-developing-countries.htm.

Three will be used here: prevalence (the average number of standards per product); frequency (the percentage of product lines in a sector that are affected by SPS measures or TBTs); and coverage (the percentage of imports by value exposed to SPS measures or TBTs). The EU is taken as a representative example of an extra-regional partner that is an important market for many OIC member states. For the analysis of intra-OIC barriers, Nigeria will be taken as a representative member of the African group, and Pakistan will be taken as a representative member of the Asian group; the dataset does not include information on most OIC member states, and in particular does not cover any member of the Arab group.

The second database comes from the WTO, and records Specific Trade Concerns (STCs) raised by members in relation to the import regimes of other members. The SPS and TBT Agreements both allow affected countries to notify STCs to the relevant committee when they perceive that they have been negatively affected by an SPS measure or TBT implemented by a trading partner, and believe it may not be justified under WTO rules. The aim of this procedure is to facilitate negotiation and compromise among members, so that SPS and TBT issues can be resolved at an early stage, without the need for lengthy and costly dispute settlement procedures. Analyzing STCs is viewed in the research community as a better way of identifying SPS measures and TBTs that potentially act as barriers to trade than simply counting SPS and TBT notifications by importing countries. The reason is that limiting consideration to STCs focuses attention on measures perceived as burdensome by exporting countries. Examining SPS and TBT notifications also suffers from the problem that countries are very inconsistent in terms of reporting practices: some issue large numbers of notifications every year, whereas others do not notify any measures. The difference in behaviors is not purely due to substantive differences in regulatory practice, but also to different approaches to WTO compliance, and different perceptions of what the notification obligations mean in practice.

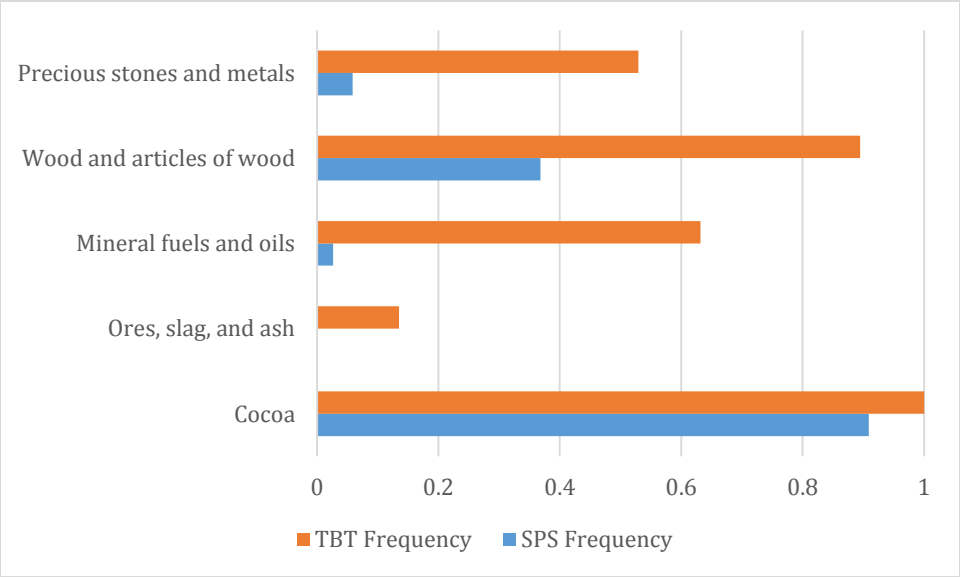
In addition to specificity in terms of data sources used and countries covered, it is also important to focus the analysis on sectors of particular importance; it is not possible in a document of this length to cover all sectors. When necessary, this section therefore focuses on the five highest value exports of each of the three OIC regional groups, as measured at the two digit level of the harmonized system (2014 data from UN COMTRADE via WITS).

5.1 Extra-OIC Trade

To begin the analysis, data from NTM Map make it possible to examine the incidence of SPS measures and TBTs on key export products of OIC member states, using the EU to provide an indication of conditions in a large, developed market. The starting point is a consideration of the frequency of these two measures, i.e the percentage of six digit product lines that is affected by measures in each two-digit sectors. Results are in Figures 7-9, taking each OIC regional group separately.

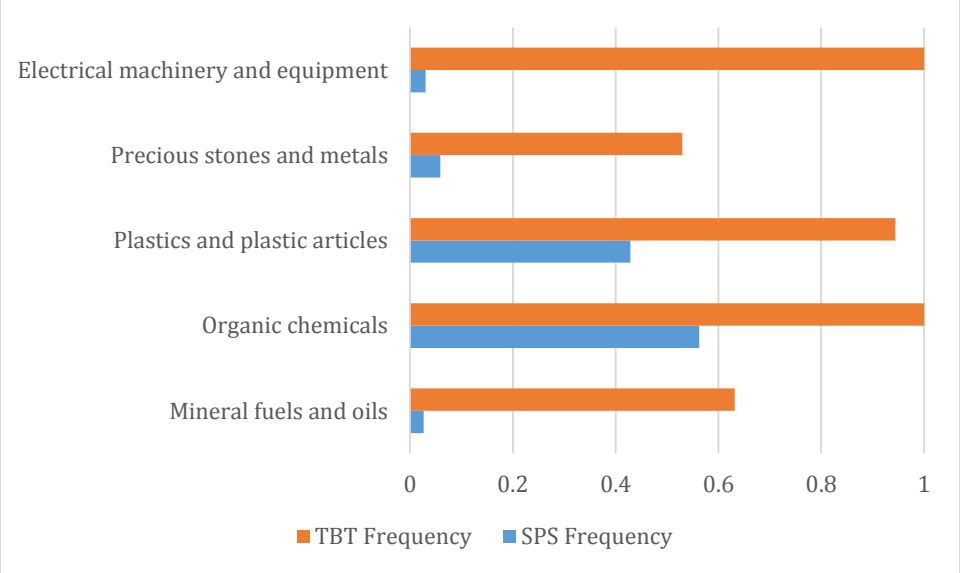
The first point to note from the figures is that SPS and TBT frequency varies markedly across sectors, and therefore across regional groups according to export composition. Although a number of sectors of export interest to OIC member states are not subject in any significant way to SPS measures—which have a scope limited to human and plant life and health—those sectors where SPS is an issue see a very high frequency rate of close to 100% (for example, cocoa and animal and vegetable fats). TBTs are more of an issue in most sectors—a fact that is often not recognized, as TBTs are seen as being relevant to manufacturing sectors with SPS being relevant to agriculture, but in fact TBTs are important in both cases. In a general sense, the African group is less subject to TBTs than the other two groups, but one of its main exports (wood products) has a 90% frequency rate for TBTs. In the Arab and Asian groups, particularly the latter, TBT frequency is often at or close to 100%. The net result of this analysis is that all OIC regional groups have an interest in developing national standards capacity so that they can meet the requirements of markets like the EU. Of course, product mix matters for assessing SPS and TBT frequency. For instance, oil exporters are generally subject to fewer standards-related requirements than exporters of simple manufactured goods (TBTs) or agricultural commodities (SPS measures). Part of the reason is that EU governments are keen to facilitate imports of oil at low cost, so they impose a minimum of non-tariff barriers. In other sectors, by contrast, there is more of an incentive to protect local production. In addition, oil exports only need to satisfy basic criteria of quality, as they do not enter directly into the human consumption chain in the way food imports do. Nonetheless, the general picture that emerges is that in a market like the EU, standards are important in most areas of key export interest to the OIC's membership, as indicated by the fact that in many cases, 90% or more of product lines are covered by TBTs in the EU, with coverage of relevant products similarly high for SPS measures.

Figure 7: Frequency of SPS measures and TBTs in the EU, five largest value exports of the African group



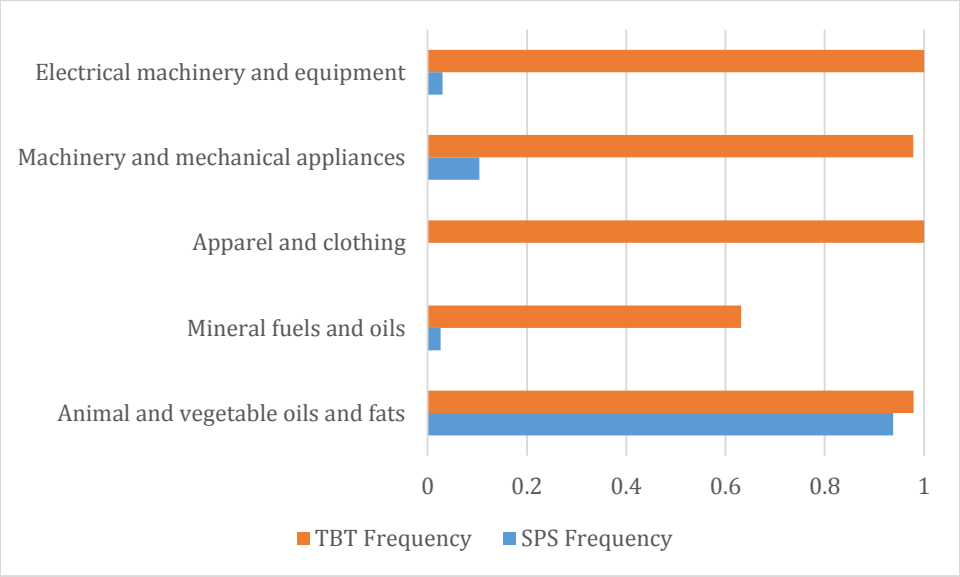
Source: NTM Map.

Figure 8: Frequency of SPS measures and TBTs in the EU, five largest value exports of the Arab group



Source: NTM Map.

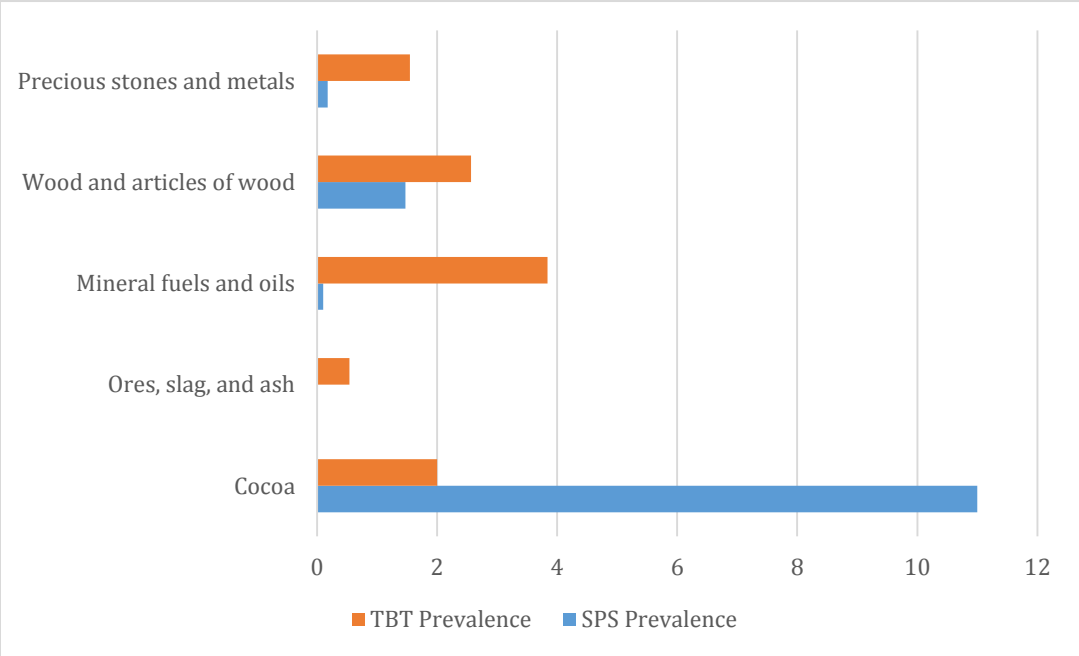
Figure 9: Frequency of SPS measures and TBTs in the EU, five largest value exports of the Asian group



Source: NTM Map.

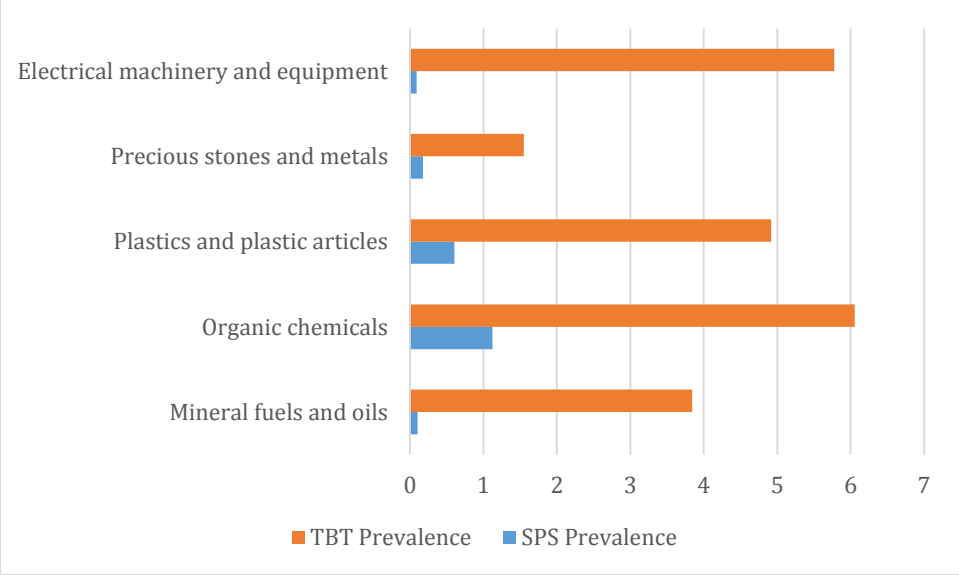
Another way of looking at the data in NTM Map is through prevalence, i.e. the average number of standards a product is subject to, taken at the two digit sector level. Results for the three OIC regional groups are in Figures 10-12. One point that emerges clearly is that products subject to SPS measures typically have to deal with more standards than those subject to TBTs only. It is particularly clear for the African group: cocoa is subject to, on average, 11 SPS measures per product, compared with just under four for mineral fuels and oils, the most standardized sector for TBTs among the African group's key exports. The same dynamic emerges for the Asian group with respect to animal and vegetable fats and oils. For the Arab group, where exports are centered around non-agricultural products, particularly mineral fuels and oils, standards prevalence is less than for the agricultural exports of the other two groups. This analysis shows that it is important to look beyond frequency based incidence assessments to consider prevalence: although TBTs affect most exports in OIC member states' key sectors, numerically it is SPS measures that are more numerous on a per product basis.

Figure 10: Prevalence of SPS measures and TBTs in the EU, five largest value exports of the African group



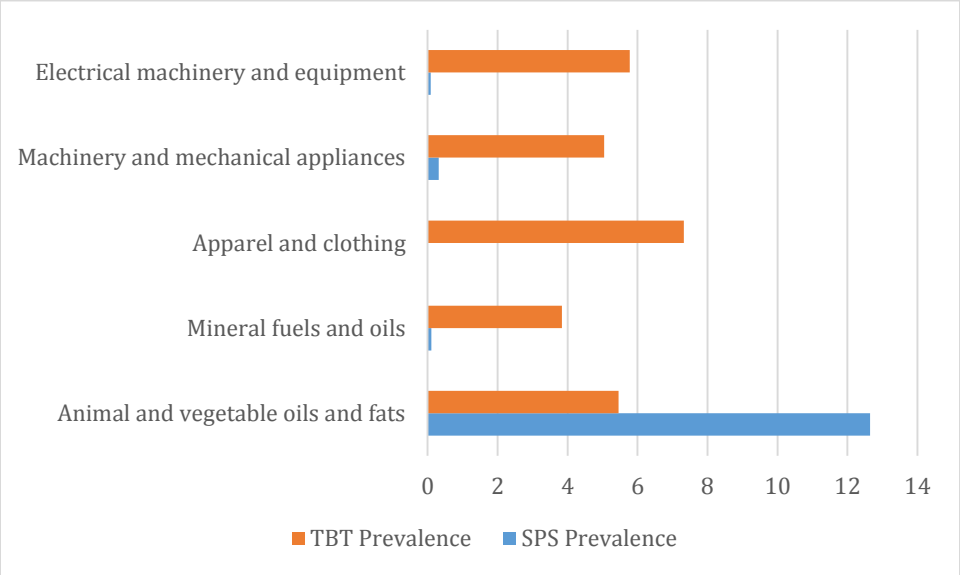
Source: NTM Map.

Figure 11: Prevalence of SPS measures and TBTs in the EU, five largest value exports of the Arab group



Source: NTM Map.

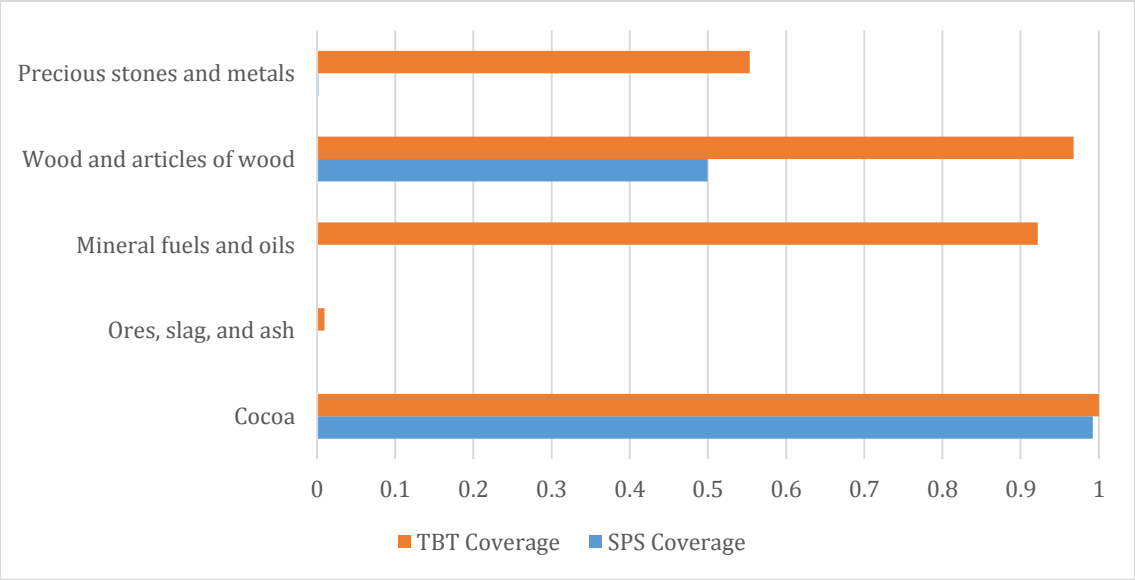
Figure 12: Prevalence of SPS measures and TBTs in the EU, five largest value exports of the Asian group



Source: NTM Map.

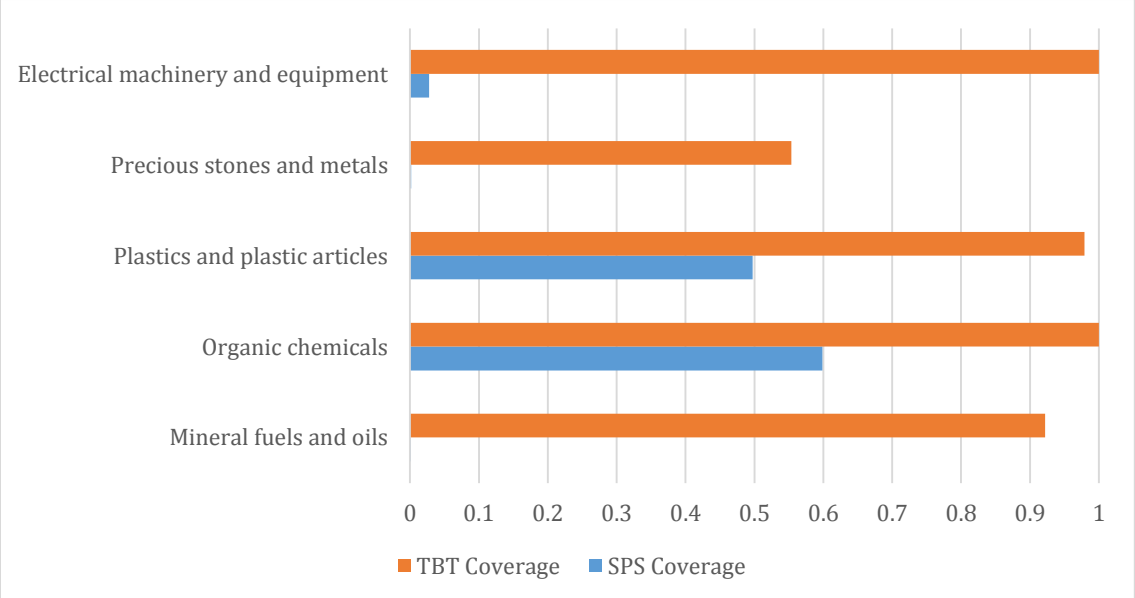
The third way in which the NTM Map data can be examined is through the lens of the coverage ratio, i.e. the proportion of imports by value that are affected by TBTs and SPS measures. The important point to take away from Figures 13-15 is that coverage ratios are in almost all cases higher than frequency ratios, which suggests that SPS measures and TBTs are focused on product lines where trade in fact takes place, and arguably on those lines with the highest unit values. A particular contrast is evident in the case of mineral oils and fuels: although a smaller proportion of product lines are subject to TBTs in that case, they cover nearly the full traded value of the sector.

Figure 13: Coverage of SPS measures and TBTs in the EU, five largest value exports of the African group



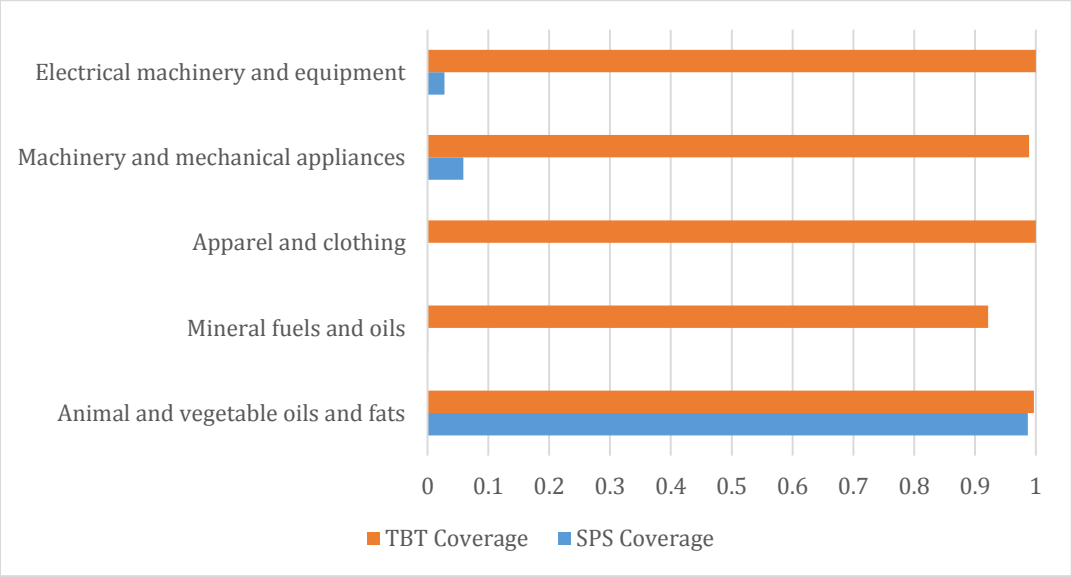
Source: NTM Map.

Figure 14: Coverage of SPS measures and TBTs in the EU, five largest value exports of the Arab group



Source: NTM Map.

Figure 15: Coverage of SPS measures and TBTs in the EU, five largest value exports of the Asian group



Source: NTM Map.

The above analysis provides some information on the incidence of SPS measures and TBTs in the EU on the key exports of each of the three OIC regional groups. It is important to interpret these data correctly, however. Importantly, frequency and prevalence do not translate directly into costs or barriers. There is no global dataset on the compliance costs associated with particular standards, so it is not possible to conclude from the above analysis whether or not compliance is more difficult in some sectors than others. The only conclusion that can be drawn is as to the density of standardization practice in the various sectors of interest to OIC member states.

To provide information on which standards potentially act as export-restricting barriers, one approach that has been used in the empirical international trade literature is to focus on STCs. Presumably, countries only report measures under the STC procedure if they are burdensome in fact for its exporters. This approach is therefore a useful one, but it suffers from the fact that the reporting procedure allows countries to identify affected products at a very broad level of generality, which makes it impossible to provide sector level incidence indicators like the frequency and prevalence measures discussed above. The approach pursued here is therefore qualitative, based on a review of the relevant data. The objective is to summarize the main dynamics in evidence from the STC notification behavior of OIC countries.

The first point to emerge from a review of the STC data is given the number of measures potentially concerned, OIC member states have only indicated that a small proportion are problematic: they have

notified 41 STCs under the TBT Agreement and 29 under the SPS Agreement. (Some notifications involve more than one country.) Of the OIC regional groupings, the Arab and Asian countries have been approximately equally involved in STC notifications under the TBT Agreement; African countries have only made a handful of notifications. Under the SPS Agreement, the Asian group is by far the most active in terms of STC notifications with 18, as compared to the African group's 9 and the Arab group's 5. While a lower number of notifications for the Arab group is consistent with their comparative advantage in non-agricultural sectors, the result for Africa stands out. In practice, it is unlikely that this pattern of notifications indicates that compliance problems are less in Africa than in either of the other two groups. Rather the lack of African notifications is likely symptomatic of capacity difficulties in terms of identifying measures with a trade impact, and assessing their effects on local industry.

In terms of products covered by STC notifications, considerable variation is notable. For TBTs, the product categories listed are sometimes very wide (e.g., "industrial products"), but it is important to note, as previously emphasized, that potentially problematic TBTs include those that deal with primary sectors, particularly food. Chemicals and energy products are also signaled a number of times, as are tobacco products. In the case of SPS, food sectors are again critical, with a number of notified measures having broad application to all food products, or a large sub-sector, such as fresh fruits and vegetables. Clearly, the choice of products and measures to be made the subject of an STC notification is in part a function of the characteristics of the country submitting it. The product distribution therefore reflects the export interests of the complaining countries, in addition to the potential restrictiveness of the standards in question.

STC notifications can also be analyzed from the perspective of the countries targeted as having potentially problematic measures. For TBT notifications, OIC member states overwhelming see the EU as having potentially restrictive standards: 19 notifications relate to that region. The second most commonly identified region is the USA, but with only five notifications, it appears to be viewed as a less restrictive TBT environment than the EU. In the case of SPS measures, the EU again stands out with 12 STC notifications, compared with only 2 for the USA. Australia, which is widely regarded as having very strict standards in the SPS area, has five notifications—a considerable number given that it is not a large export destination for OIC member states outside Asia.

Taking all of this information together, it is clear that the STC data provide an important gloss on the information coming from NTM Map: although OIC member states are affected by many standards in sectors of key export interest, only a very small fraction are actively perceived as overly restrictive, in the sense of being problematic from a WTO standpoint. Of course, countries do not necessarily notify all problematic measures, as that depends on information flow from the private sector, as well as public

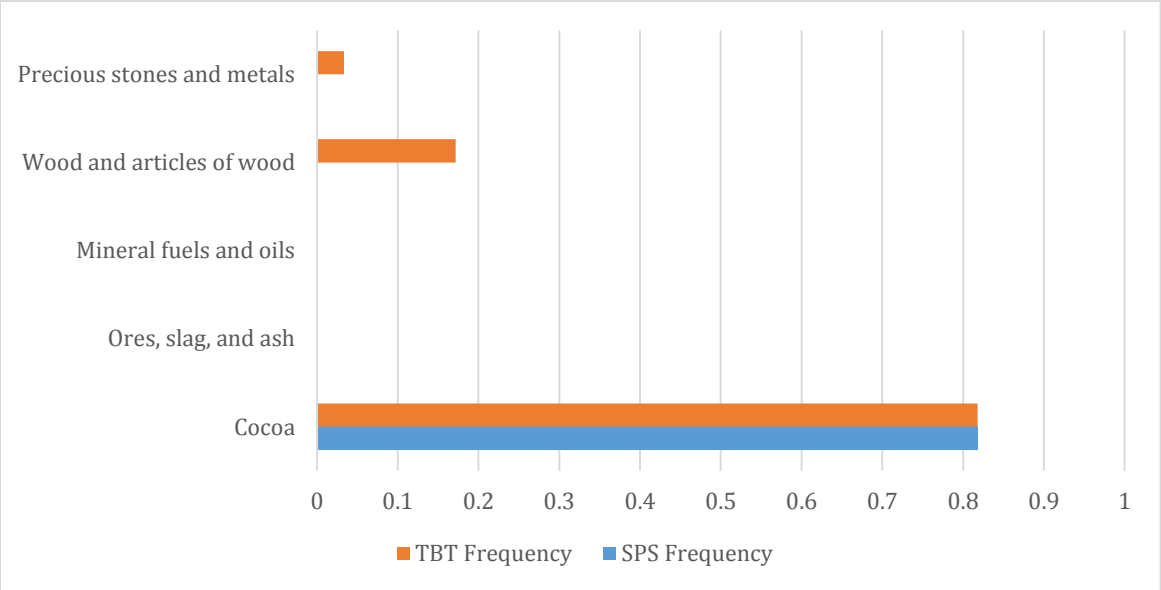
sector considerations, such as diplomatic relations with the target country. Nonetheless, the data serve to keep the "standards as trade barrier" argument in perspective: some standards can indeed be problematic, but the overwhelming majority are not seen as being protectionist either in intent or practice.

5.2 Intra-OIC Trade

As for the OIC's trade with external partners, examined in the previous section, a consideration of intra-regional trade starts from an analysis of the NTM Map data, using Nigeria and Pakistan as representative markets for OIC member states' exports. The same sectoral approach is used as in the previous section.

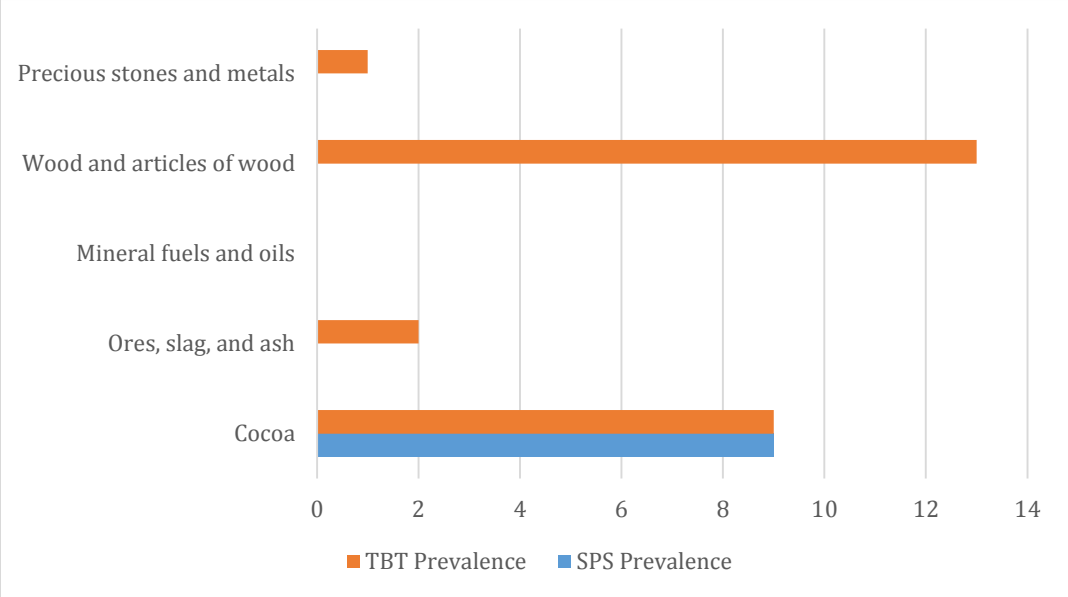
Figures 16-21 present results for the most valuable export products of the OIC African group. It is immediately clear that the incidence of standards-related trade measures is quite different in Nigeria and Pakistan from what is observed in the EU. First, a number of sectors of export interest to the African group do not have SPS measures or TBTs at all, particularly in Pakistan. Second, the number of measures concerned is generally less than for the EU. In addition, coverage ratios are typically comparable to, or less than, frequency ratios, so there is not the same evidence of increased standardization in high value sectors as in the EU. Although, as noted previously, prevalence and frequency do not translate directly into trade costs, there is nonetheless indicative evidence that standards-related issues are less of a factor holding back African group exports within the OIC membership than for external trade relations, particularly with large, developed markets like the EU. This finding is indicative of the fact that standards infrastructure is relatively underdeveloped in many OIC member states, particularly those at lower levels of per capita income. However, it should not be concluded from the figures that exporting to countries like Nigeria and Pakistan is necessarily "easier" than exporting to developed markets: although the standards burden may be lighter, other procedural obstacles, including poor trade facilitation, can still make it difficult to enter the market.

Figure 16: Frequency of SPS measures and TBTs in Nigeria, five largest value exports of the African group



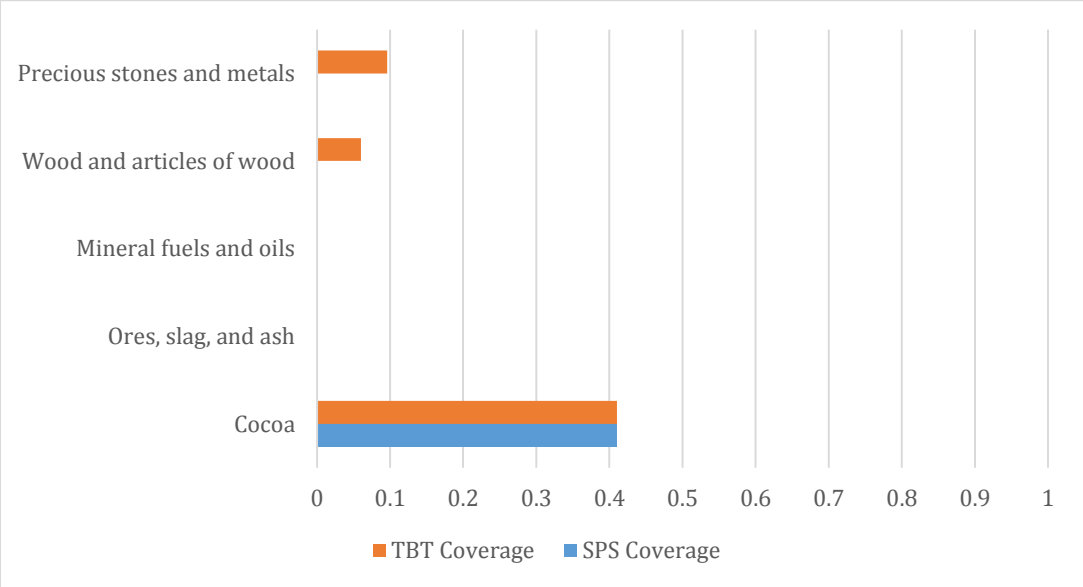
Source: NTM Map.

Figure 17: Prevalence of SPS measures and TBTs in Nigeria, five largest value exports of the African group



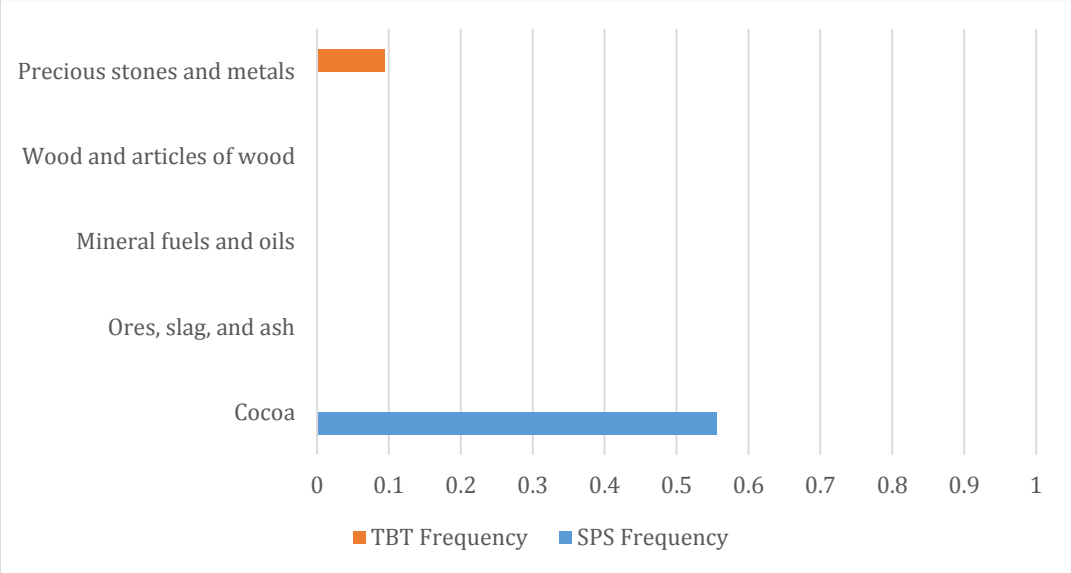
Source: NTM Map.

Figure 18: Coverage of SPS measures and TBTs in Nigeria, five largest value exports of the African group



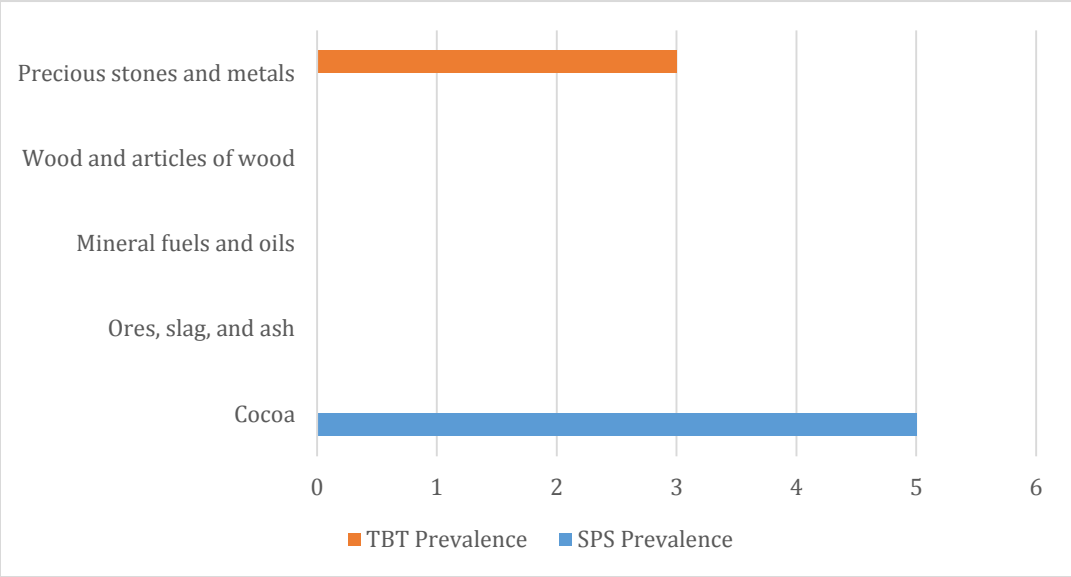
Source: NTM Map.

Figure 19: Frequency of SPS measures and TBTs in Pakistan, five largest value exports of the African group



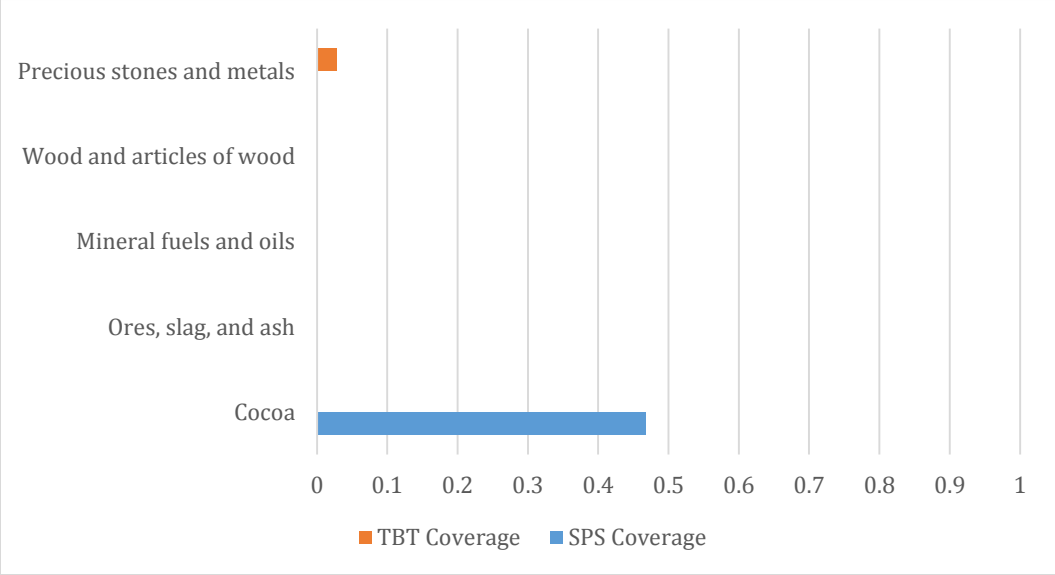
Source: NTM Map.

Figure 20: Prevalence of SPS measures and TBTs in Pakistan, five largest value exports of the African group



Source: NTM Map.

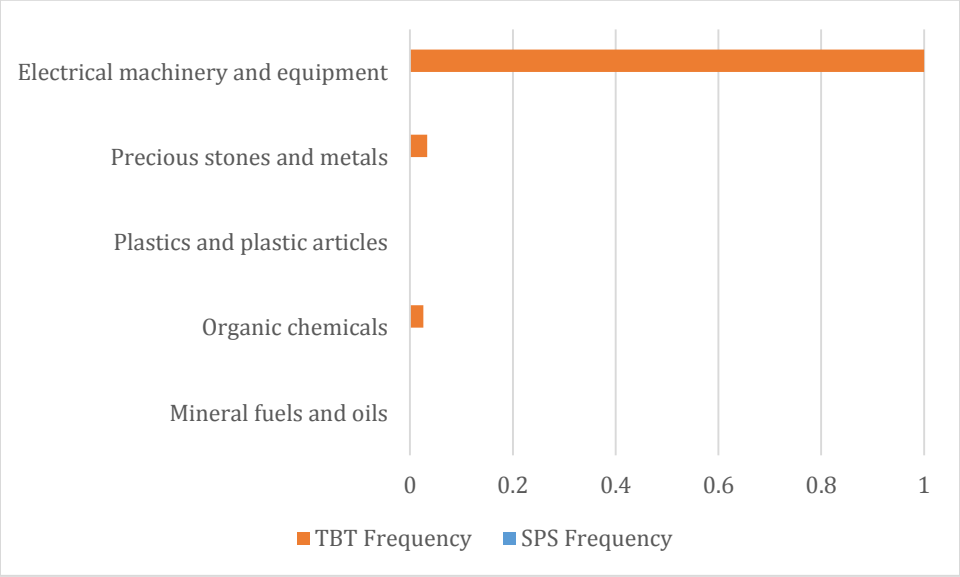
Figure 21: Coverage of SPS measures and TBTs in Pakistan, five largest value exports of the African group



Source: NTM Map.

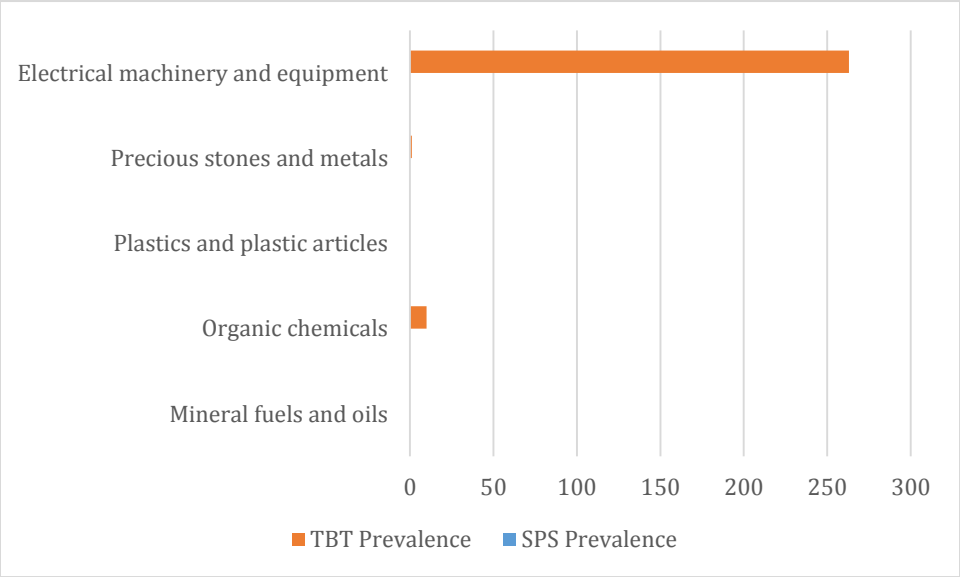
Figures 22-27 repeat the analysis for the five largest value export sectors of the Arab group. By comparing these figures with those for the African group, it is immediately clear that the product composition of trade matters a great deal in terms of assessing the standards environment within the OIC itself. In both Nigeria and Pakistan, electrical machinery and equipment is subject to a very high number of standards—and it is important to recall that NTM Map only captures mandatory, public standards. In particular in Nigeria, the sector is subject to 267 TBTs, which is a very high number, and much more than is observed in the presumptively high standard EU. A similar situation is apparent in the case of organic chemicals in Pakistan, where 49 TBTs are in force. A conclusion that can be tentatively drawn from this analysis is that at least some OIC member states are overly reliant on mandatory public standards in some sectors of export interest to other OIC member states. As noted above, the clear trend in standards systems around the world is to reserve mandatory public standards for core issues of health and safety only, with voluntary standards used to structure other marketplace issues. It is important to nuance this conclusion, however, by noting that the coverage ratio of SPS measures and TBTs is not close to one, which indicates that a significant proportion of sectoral exports by value in fact achieve market access without being affected by these measures.

Figure 22: Frequency of SPS measures and TBTs in Nigeria, five largest value exports of the Arab group



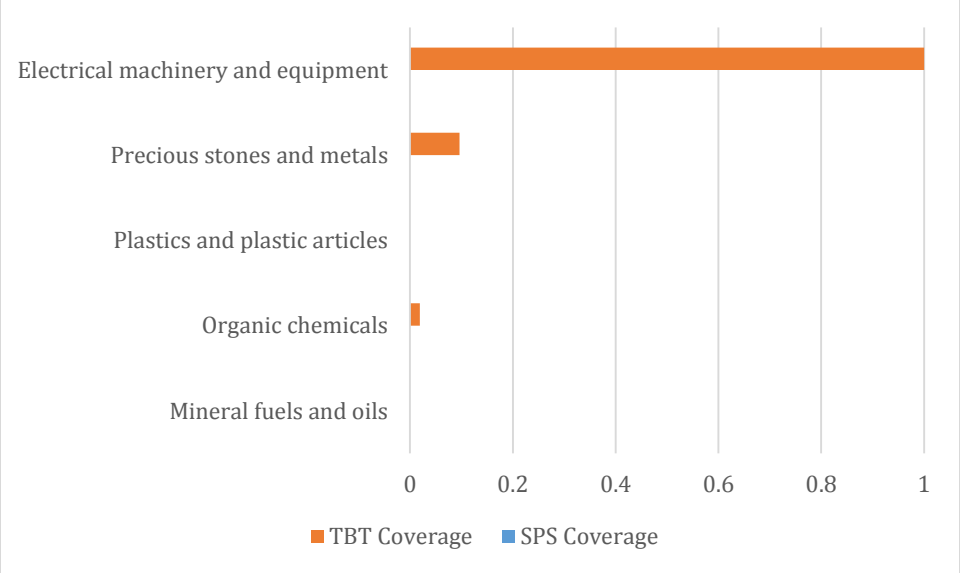
Source: NTM Map.

Figure 23: Prevalence of SPS measures and TBTs in Nigeria, five largest value exports of the Arab group



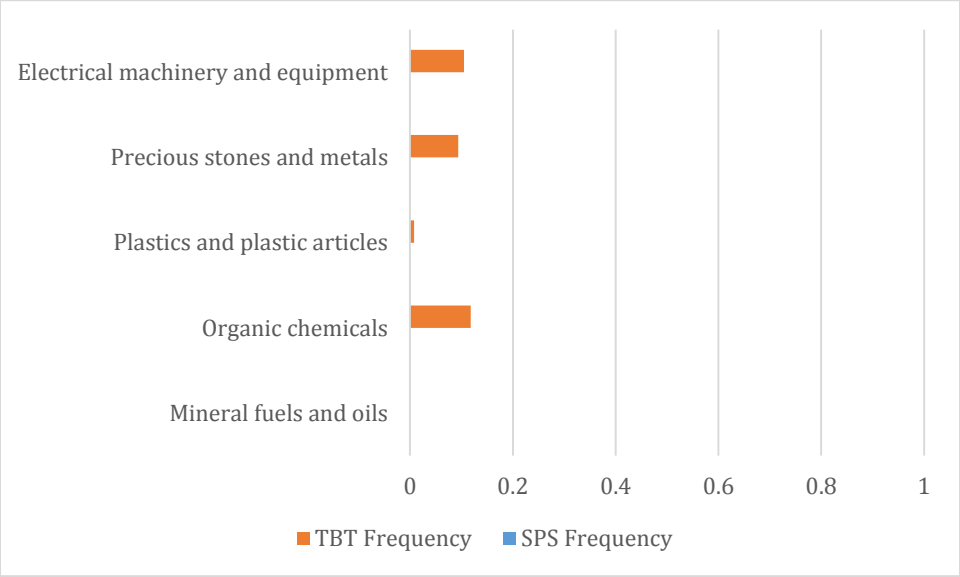
Source: NTM Map.

Figure 24: Coverage of SPS measures and TBTs in Nigeria, five largest value exports of the Arab group



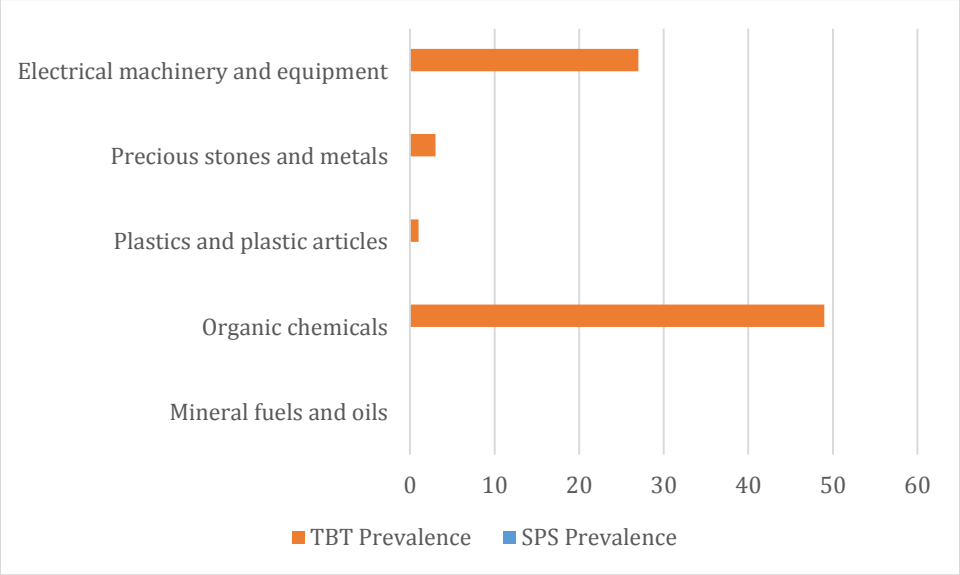
Source: NTM Map.

Figure 25: Frequency of SPS measures and TBTs in Pakistan, five largest value exports of the Arab group



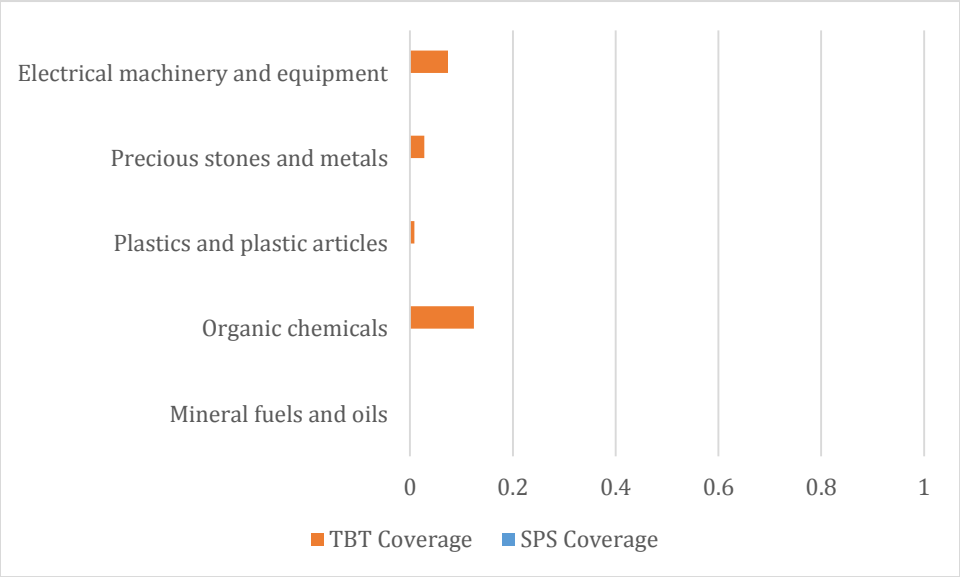
Source: NTM Map.

Figure 26: Prevalence of SPS measures and TBTs in Pakistan, five largest value exports of the Arab group



Source: NTM Map.

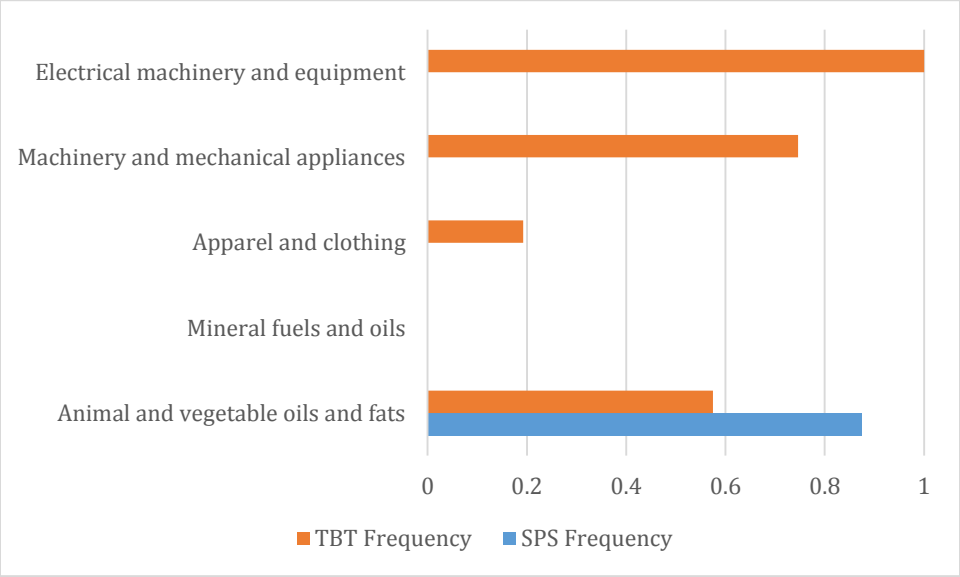
Figure 27: Coverage of SPS measures and TBTs in Pakistan, five largest value exports of the Arab group



Source: NTM Map.

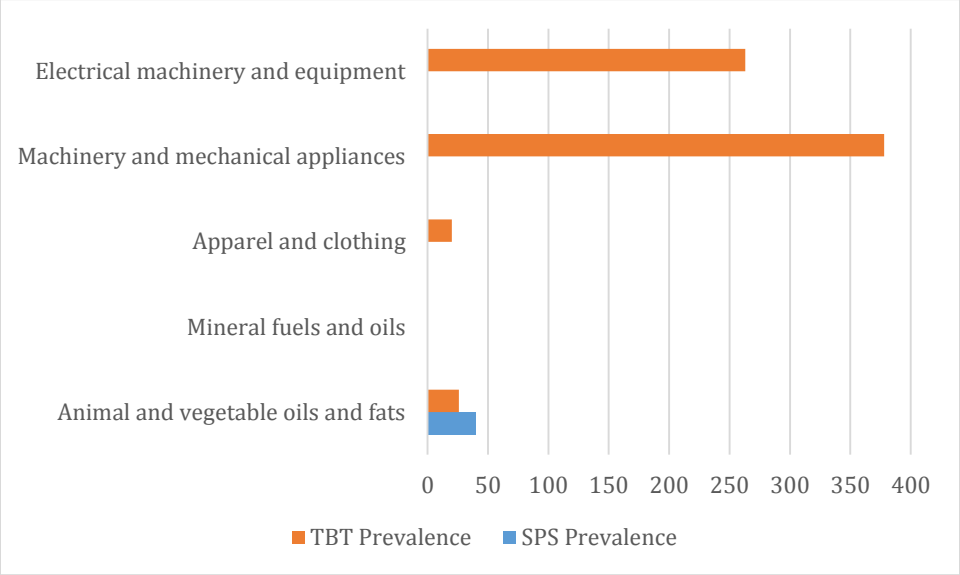
The final six figures in this section provide information on SPS measures and TBTs in Nigeria and Pakistan as they affect the exports of the Asian group. The analysis for the Asian group's exports reinforces the picture that emerged from a consideration of the Arab group's exports: some manufactured goods sectors are subject to very high numbers of TBTs in some OIC member states, taking Nigeria and Pakistan as broadly representative of regional trends. In Nigeria, the two machinery sectors stand out: the case of electrical goods has already been referred to, but there are in fact more TBTs per product in the mechanical goods sector, as many as 378. In Pakistan, it is the case of apparel and clothing that stands out, with an average of 105 TBTs per product. Again, this analysis suggests that some OIC members may be too reliant on mandatory public standards, in particular in a sector like apparel and clothing where the issues of safety that arise with electrical goods are largely absent (although products of course need to meet basic requirements, like fire safety). It is likely that compliance with these measures represents a significant burden for exporters in other OIC member states.

Figure 28: Frequency of SPS measures and TBTs in Nigeria, five largest value exports of the Asian group



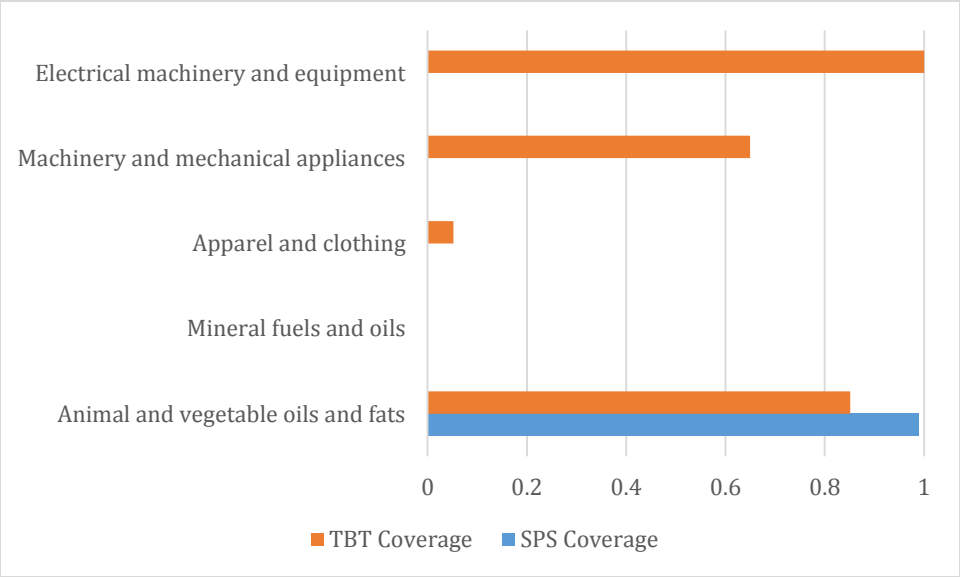
Source: NTM Map.

Figure 29: Prevalence of SPS measures and TBTs in Nigeria, five largest value exports of the Asian group



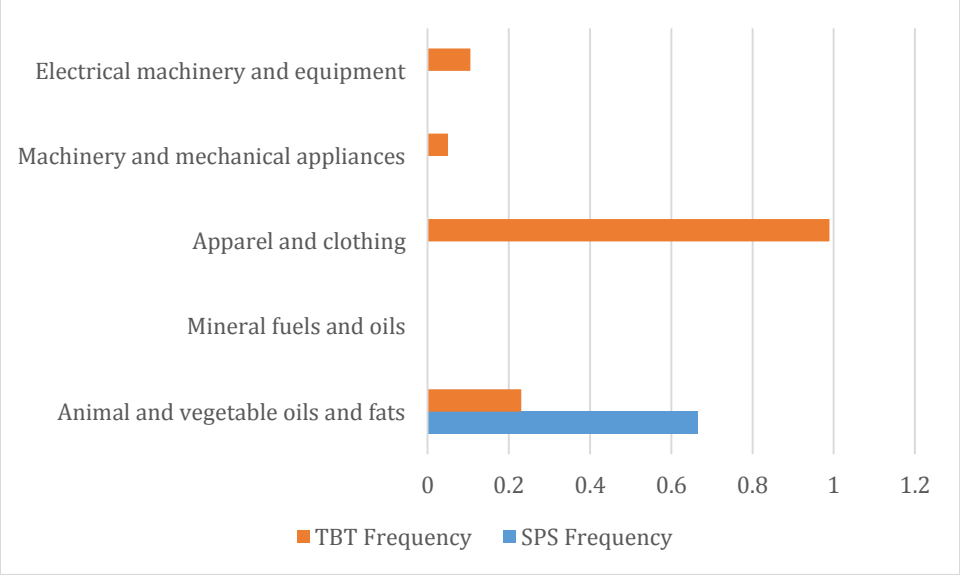
Source: NTM Map.

Figure 30: Coverage of SPS measures and TBTs in Nigeria, five largest value exports of the Asian group



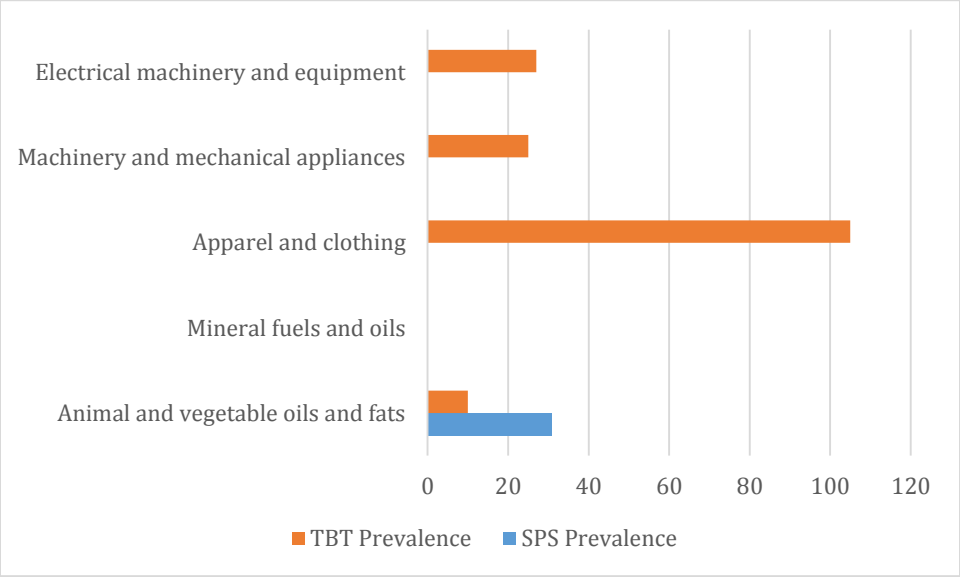
Source: NTM Map.

Figure 31: Frequency of SPS measures and TBTs in Pakistan, five largest value exports of the Asian group



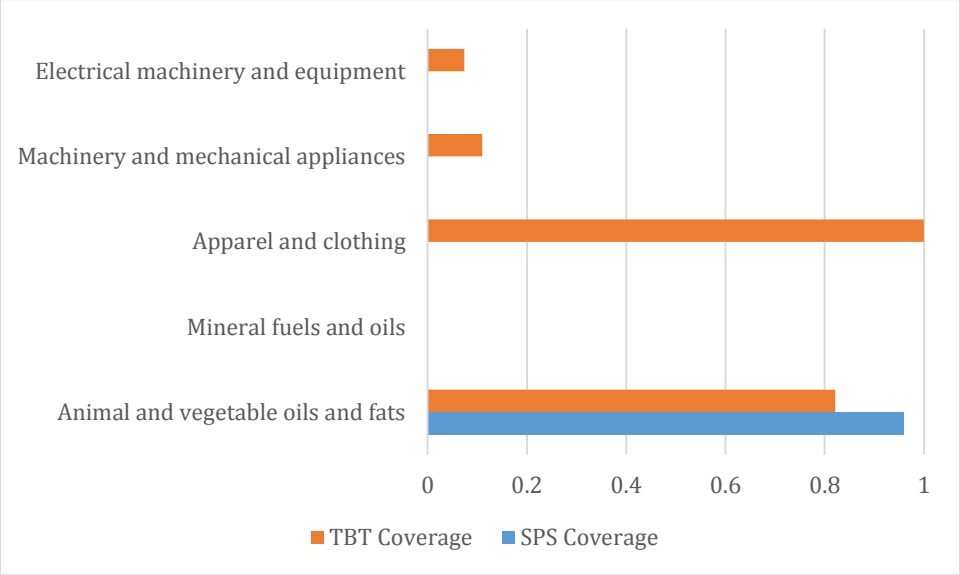
Source: NTM Map.

Figure 32: Prevalence of SPS measures and TBTs in Pakistan, five largest value exports of the Asian group



Source: NTM Map.

Figure 33: Coverage of SPS measures and TBTs in Pakistan, five largest value exports of the Asian group



Source: NTM Map.

As for extra-OIC trade, it is important to complement the picture of SPS and TBT incidence that emerges from NTM Map with a consideration of STC notifications made by OIC member states against other OIC member states. This analysis provides information as to the extent to which standards are in fact perceived as potential barriers to intra-regional trade, although it is important to keep in mind that countries typically make STC notifications only when a significant amount of exports is in question, so the focus is necessarily on large markets, like the USA and the EU.

In the TBT Committee, OIC member states have only raised three STCs involving other OIC member states. Two of the matters were initiated by Turkey (bottled water exports to Egypt, and halal meat and poultry exports to Malaysia), and one by Egypt (consumer protection labeling in Indonesia). In the case of the SPS Committee, OIC member states have not notified any STCs with respect to other OIC member states. It is important not to read to much into these results. In particular the low number or lack of STC notifications does not mean that standards issues do not raise the costs of intra-regional trade within the OIC. Countries typically notify STCs in relation to new standards issues, or changes in regulations, not long standing positions that businesses have adjusted to. In light of the NTM Map analysis, it is likely that product standards are a serious issue for many firms within the OIC, particular for manufacturers in Asia and the Arab countries. There is likely considerable scope to free up intra-OIC trade by moving forward on product standards.

6 COUNTRY CASE STUDIES

This section presents case studies of the use of international standards in various contexts. Three case studies come from OIC member states: Bangladesh, Egypt, and Senegal. These countries were chosen to represent different geographical and cultural groups, as well as countries of different sizes and development levels. To contrast the experience of these countries with what is happening elsewhere in the world, the remainder of the section presents case studies from outside the OIC, focusing on APEC, ASEAN, and the East African Community. Before presenting the case studies themselves, the next subsection outlines the conceptual framework and methodology that underlies them, and presents the rationale behind the selection of the OIC case study examples.

6.1 Conceptual Framework and Methodology

In line with the TORs, the primary methodology for this report is qualitative, namely a combination of desk reviews and case studies based on interviews with key personnel in relevant agencies. This section outlines the approach to each part of the assignment in detail.

6.1.1 International Standards and OIC Member States: Desk Review

The first component of this project, embodied in Sections 2, 4, and 5 of the report, is a desk review examining the institutions and structures underpinning the use of international standards in OIC member states. The desk review makes use of the published literature, as well as websites of relevant agencies and institutions.

To complement the literature-based desk review, the project team also reached out to standards organizations in OIC member states to obtain more detailed information on the use of product standards in each country, and in particular the extent of implementation of internationally harmonized standards. Contact was made by email with national standards agencies, with follow up by email and telephone. The response rate for this part of the project was not high, but the available data are presented in the report as a guide to the current state of practice on the ground in OIC member states.

6.1.2 Examples of Best Practice: Desk Review and Semi-Structured Interviews

Six case studies were undertaken to identify examples of best practice that can be of use to OIC member states. Three case studies are to come from the OIC membership itself, and three are to come from outside, including one regional example such as APEC or ASEAN.

In line with the report's overall approach, the case studies (Section 6) were conducted primarily using qualitative techniques. The starting point in each case was a desk review of the available literature on

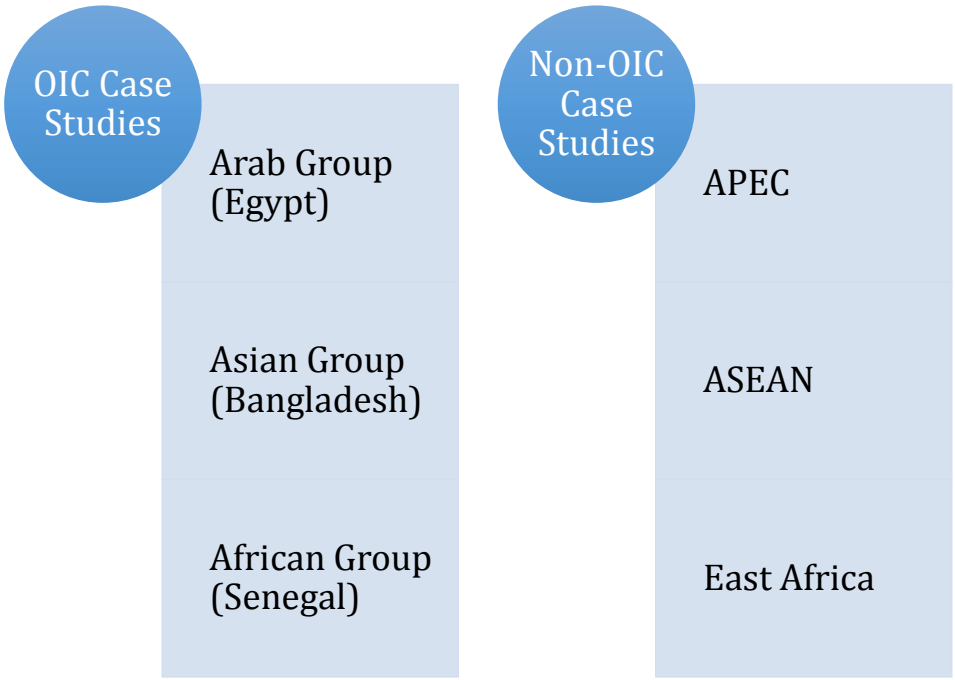
standards and trade in the country or region in question. The literature search was combined with a review of the websites of the national standards body and any relevant government agencies. This approach served to provide a the general outline for each of the case studies, and was helpful in identifying the key issues to be addressed.

In the case of the OIC member states examined for the case studies—Bangladesh, Egypt, and Senegal—the desk review was followed up with semi-structured interviews of key personnel in national standards agencies and relevant government and non-governmental bodies. Interviews were conducted in person during field visits, as well as by Skype if in-person availability was not possible for scheduling reasons. Each interviewer from the project team used an instrument (Appendix 1) identifying the most important areas in which information was to be gathered from interviewees. These areas provide the structure for the interview, and ensure that each interview yields, at a minimum, comparable information on a selected range of issues.

However, the semi-structured nature of the interview protocol meant that interviewees were not limited to these pre-selected areas in their discussions with the interviewer: there was scope for them to impart knowledge and opinions they consider important, and which helped contextualize the more standardized findings from the structured questions. Officials responded well to the semi-structured protocol, and provided extensive information upon which the case studies could be built. Many also supplied relevant documentation, which was used to supplement what could be learned during the desk review phase.

The approach to selection of case study examples is set out in Figure 34. In terms of the OIC case studies, it is important to ensure that the approach is inclusive in terms of the OIC's diverse membership—both regionally and in terms of level of income and development. The case studies therefore cover both developing and least developed countries, and involve one country from each of the OIC's country groups: the Arab group (Egypt), the Asian group (Bangladesh), and the African group (Senegal).

Figure 34: Plan for case studies.



Source: Author

It is important to stress the rationale behind the choice of case study countries. Egypt is a country that has historically been seen as having significant non-tariff barriers in place, which have held back trade integration. However, it has undertaken significant reforms to its quality infrastructure over recent years. It has become more active in terms of standards development, but also recognizes that is not possible to cover the field in terms of comprehensive coverage of all products and sectors, so it allows goods that conform to a selection of international standards into its market if there is no relevant Egyptian standard. In line with most countries, the proportion of mandatory standards in Egypt has been falling over time, and now represents only about 15% of the total. In addition, the country has benefitted from technical assistance and capacity building, and has been developing export capacity to important markets, in particular the EU.

The second country, Bangladesh, has been enjoying considerable success in the ready made garment (RMG) sector. Development of this activity has relied on linking to GVCs, where lead firms—typically "fast" retailers—play an important role in terms of standardizing products and requiring uniform and high quality output. Bangladeshi firms have therefore had to continuously upgrade production processes in order to stay competitive in this sector that is seen as important by many developing countries in the early stages of industrialization. Although improvements are notable, Bangladesh's

quality infrastructure is less developed than Egypt's. One development that is important is that the RMG industry has developed some sectoral competence in standards, for instance with its own testing laboratories. Bangladesh's experience is therefore informative for lower income developing countries, particularly those with sectoral expertise. It shows that developing standards capacity goes hand in hand with sustained gains in export competitiveness, particularly in sectors where the GVC model is important.

The third OIC case study is Senegal. Like Bangladesh, Senegal is an LDC, but it has less manufacturing capacity and relies to a greater extent on agriculture within its economy. Senegal's experience is interesting because as a small, low-income country, it faces considerable technical and financial challenges in developing quality infrastructure. It currently has relatively few standards, but a high degree of international harmonization. Senegal is seeking to develop quality infrastructure in collaboration with its UEMOA regional partners, in recognition of the fact that some elements of quality infrastructure, such as testing laboratories, are relatively expensive, and so are best developed at a higher level of scale than a single small country. Although there is still substantial work to be done at the national and regional levels, Senegal is clearly aware of the role that standards and harmonization can play in boosting export competitiveness, in particular in the key EU market.

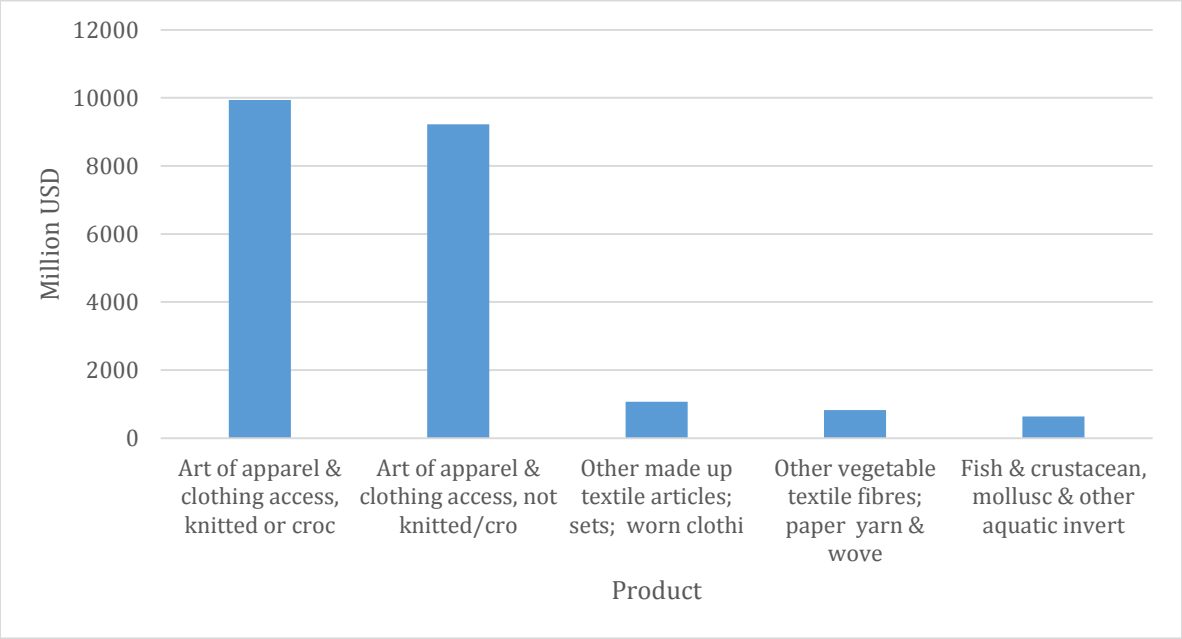
For the non-OIC case studies, the report uses two examples, namely APEC and ASEAN. These two forums have overlapping membership, but they approach standards and conformity assessment in quite different ways, relating in particular to the extent of institutionalization of the issue, and the use of legally binding instruments. It is also notable that both organizations include OIC member states. The third non-OIC case study is East Africa. In keeping with the spirit of the other two case studies, the approach will be regional in scope, focusing on the East African Community, where efforts have been underway to harmonize standards. The choice of East Africa is motivated by its links to the African membership of OIC, its inclusion of developing and least developed countries, and the importance given to international harmonization by standards bodies in the region. An examination of the East African case can inform a significant proportion of OIC's membership that might be interested in pursuing regional approaches to harmonization and standardization, due to limited technical and financial capacity in country. In this sense, it provides a point of contrast with the example of Senegal, from the different institutional context of West Africa.

6.2 OIC Member State Case Studies

6.2.1 Bangladesh

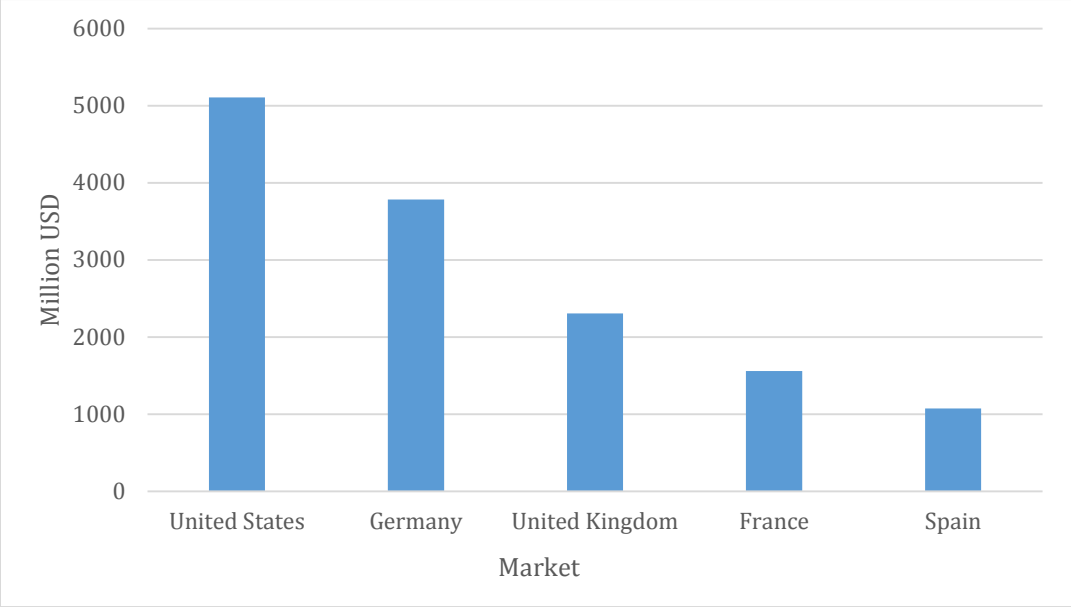
Bangladesh is an LDC with a per-capita income of USD$1,314 in 2014 (measured at purchasing power parity rates). Classified as a Next Eleven emerging market and one of the Frontier Five, the country has exhibited average GDP growth of 6% per annum over the last decade. The economy is increasingly led by export-oriented industrialization. The Bangladesh textile industry is the second largest in the world. Other key sectors include pharmaceuticals, shipbuilding, ceramics, leather goods, and electronics. Agriculture also plays a crucial role in the economy, with the principal cash crops being rice, jute, tea, wheat, cotton, and sugar cane. Bangladesh also ranks fifth in the global production of fish and seafood. Figure 35 shows the top five export sectors for Bangladesh—the dominant role of textiles is clear. The following figure highlights the five most important export markets, and it is clear that extra-regional trade with developed markets is of particular importance to the country.

Figure 35: Top five export sectors for Bangladesh, 2011



Source: WITS-Comtrade.

Figure 36: Top five export markets for Bangladesh, 2011.



Source: WITS-Comtrade.

The garment and textile sector in Bangladesh—where standards issues loom large—accounts for $19 billion in annual exports, which equates to 80% of total export earnings and 20% of the country's GDP. The industry employs 4.2 million workers—mostly women—in formal private sector jobs in more than 4,500 factories (IFC, 2014). The Bangladesh readymade garment (RMG) sector accounts for 5% of the world RMG export market, with leading global garment buyers increasingly relying on Bangladesh to meet their needs, especially at the lower end of the value chain.

In its most recent Trade Policy Review for Bangladesh, the report by the WTO Secretariat (2012) attributes the RMG sector's standing largely to its price competitiveness (especially for low value RMG products), the duty-free quota-free access that RMG products enjoy in Bangladesh's major markets (EU, Japan, Australia) owing to the country's LDC status, and the government's export promotion measures. That said, according to the Bangladesh Textile Mills Association (BTMA)[4], "out of 3500 RMG factories over 2000 are already complying with the international standard. Many of these factories have obtained international standard certificates like ISO-series, GFSI and FSSC. On the basis of these certificates Bangladesh RMG factories are now on top in the list of buyers." McKinsey and Company (2011) A 2011 report by McKinsey and Company also mentions that the Bangladesh RMG sector "provides satisfactory quality levels, especially in value and entry-level mid-market products".

[4] http://www.bangla-expo.com/DTG/newsDetail.asp?serno=506

The BTMA further states that maintaining compliance with international product standards has increased productivity, resulting in lower production costs and maintaining international competitiveness. This process has enabled the Bangladesh RMG sector to buck the global trend towards slowing sales. Despite a sluggish global market, aggregate RMG exports registered near 4% growth (amounting to US$ 4.99 billion) in the first quarter of the current fiscal year compared to the corresponding period of the preceding year. The world's leading retailers including GAP, H & M, JC Penny, Tesco, Walmart, Marks & Spencer, Kohl's, and Carrefour continue to buy high volumes from the Bangladesh RMG sector, given competitive prices and compliance with international product standards.

In fact, since 2009, PROGRESS[5], a joint project of the Bangladesh Ministry of Commerce and the German Federal Ministry for Economic Cooperation and Development (BMZ) implemented by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, has been conducting various training courses for RMG industry representatives on topics including:

a) The EU Regulation on Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH), which has a notable impact on Bangladesh's RMG sector as it requires clothing manufacturers to identify the chemicals used in their products;
b) Profitable Environmental Management Approach (PREMA), which improves factories' chemical management with positive effects on health, safety, and the environment, as well as cost savings and increased productivity due to more efficient use of chemicals; and
c) International environmental standards, such as ISO 14001, to enhance the capacity of environmental auditors in the country.

6.2.1.1 Standards Infrastructure

Elements of the country's national standards infrastructure include the following, mostly run by the public sector:

a) Standards body: The Bangladesh Standards and Testing Institution (BSTI) is the National Standards Body, as well as the only standards body in the country under the Ministry of Industries, responsible for promulgation of mandatory and voluntary standards.
b) Metrology institute: National Metrology Laboratory (NML), under the control of the Metrology Wing of the BSTI.
c) Testing laboratories: BSTI has accredited testing laboratories. Private testing laboratories are also available in Bangladesh. Approximately 40 laboratories have been accredited by BSTI, but

[5] http://www.psesbd.org/index.php/publications/item/download/38_8c515700edc280cc59b9021706654aa7

the total number of testing laboratories is likely much higher, perhaps 400-500, with accreditation ongoing. The process will need to intensify given the importance of standards to Bangladesh's export competitiveness. The total number of laboratories is encouraging, but until they are accredited, they are unlikely to provide a sufficient basis for importers to be confident in results.

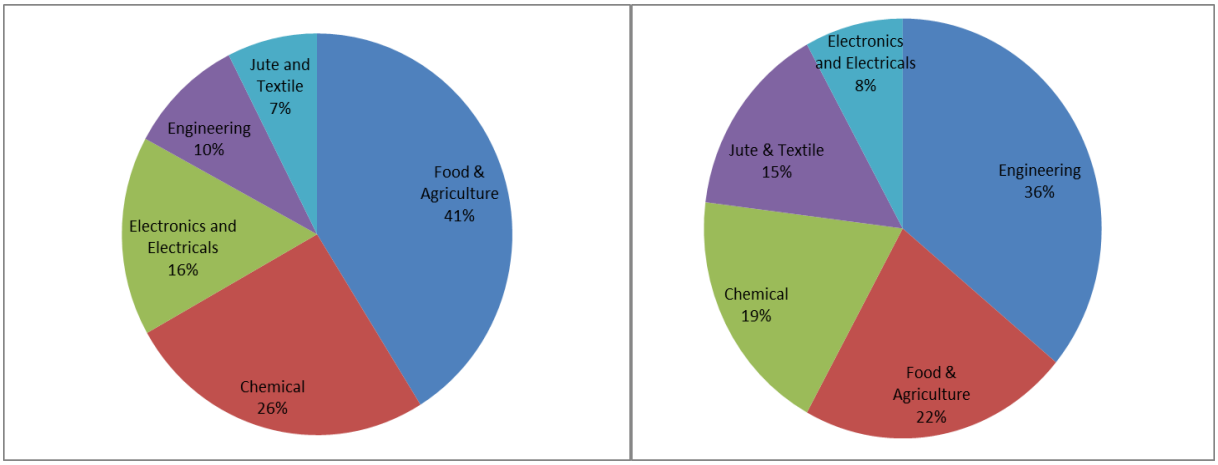
d) Inspection bodies: Both product certification and management systems certification activities are performed after inspection. Therefore, before issuing certificates, BSTI also acts as the inspection body. There are also private inspection bodies in the country.

e) Certification bodies: BSTI is the only product certification body in the country. BSTI also issues management systems certificates. Additionally, twenty private management systems certification bodies also operate in the country. Having only one product certification body in the country has the advantage of establishing a well known process and outcome, which is easily recognizable. However, BSTI's resources are limited, and it is likely that certification represents a bottleneck for at least some firms. It will be important to examine potential ways of loosening this constraint in the future, such as splitting certification activities into different agencies according to sector or type of certification (safety, quality, etc.).

According to the WTO's Trade Policy Review Report, the Bangladesh Ministry of Industries is responsible for leading and facilitating the legal and technical institutional framework for national standards, quality, and conformity assessment. The main institutions in this regard are the BSTI and the Bangladesh Accreditation Board (BAB). BSTI, the national standardization body, formulates national standards for all products except pharmaceutical products, enforces compliance with standards, and certifies the quality of products for local consumption, export, or import. The BSTI Council, the highest decision-making organ of the institution, consists of representatives from different ministries, business chambers, scientific organizations, and universities.

The BSTI has issued 155 mandatory and 3,528 voluntary product standards as of June 2015. Almost 50% of the 3,683 standards in Bangladesh are identically adopted from international standards such as ISO and Codex Alimentarius. The sector-wise break-up of these standards is shown in Figure 26.

Figure 37: Sector-wise breakdown of mandatory and voluntary product standards in Bangladesh



Source: BSTI, own calculations. Note: Sectoral data are not available for all standards.

Figure 37 reveals that the sector-wise distribution of mandatory standards in Bangladesh is dominated by the food/agricultural and chemical sectors, which account for two-thirds of all mandatory standards. Engineering and food/agriculture account for nearly 60% of 1,527 voluntary standards for which sectoral information is available. Interestingly, the textiles sector that accounts for 80% of the country's export earnings has only 7% of total mandatory and 15% of total voluntary standards issued by the BSTI.

Testing and certification procedures for mandatory standards are the same for domestic and imported products. In exercising the power conferred by the Bangladesh Standards and Testing Institution Ordinance 1985, BSTI develops national standards for products and services. In theory, Bangladesh allows the sale of products that comply with standards issued by an international organization if there is no relevant domestic standard, but in practice, the sale of such products requires a certificate from the BSTI.

Bangladesh has also notified the WTO of its acceptance of the Code of Good Practice of the WTO Agreement on Technical Barriers to Trade. BSTI is Bangladesh's WTO TBT national enquiry point. It has an internal committee on WTO affairs and participates in the working groups on WTO agreements in the Ministry of Industries and Ministry of Agriculture. BSTI works on the implementation of the TBT Agreement, while the Ministry of Commerce is responsible for the implementation of the SPS Agreement.

6.2.1.2 Harmonization and Mutual Recognition

The main policy objectives in the area of standards and technical regulations are the harmonization of national standards with international standards and the adoption of international standards. As of 2012, international standards adopted by BSTI included 1,368 ISO Standards and 163 IEC standards. Bangladesh is also a member of the ISO, and in 2001 became an affiliate member of the IEC. Over time, the BSTI has been being strengthened in the areas of quality assurance, accreditation, and certification.

As a full member of ISO, affiliate member of the IEC, and full member of the Codex Alimentarius, Bangladesh always tries to play an active role in the work of international standardization. It has participated 22 times in the ISO's Technical/Scientific Committees, twice in the ISO's Policy Development Committee, and seven times in the Codex Committee.

According to the WTO's Trade Policy Review, Bangladesh has been upgrading its quality infrastructure to international level by collaborative efforts with a newly operational Bangladesh Accreditation Board (BAB). Under the Bangladesh Accreditation Act (2006), the BAB has been established as an autonomous organization, which now functions under the administrative control of the Ministry of Industries. It has the task of developing an accreditation process in Bangladesh. Over time, the BAB has developed relevant rules and regulations and initiated an awareness program for stakeholders, academia, laboratories, and conformity assessment bodies (Box 6).

Box 6: Bangladesh Accreditation Board

The BAB was established under the Ministry of Industries in November 2006 through an Act passed by Parliament. It is an autonomous organization mandated to upgrade the quality assurance infrastructure and conformity assessment procedures in Bangladesh. It offers accreditation to different types of conformity assessment bodies in line with international standards.

The BAB is empowered to accredit Testing and Calibration Laboratories (ISO/IEC-17025), Medical Laboratories (ISO-15189), Inspection Bodies (ISO/IEC-17021), Personnel Certification (ISO/IEC-17024), and Product Certification (ISO/IEC Guide 65). It is responsible for framing policies and approving rules and regulations for accreditation, and establishing multilateral recognition arrangements (MLA) with regional and international accreditation bodies. It undertakes training programs, seminars-symposiums, proficiency testing, and harmonization of standards.

Currently, accreditation arrangements are managed at the global level by the Australia-based International Laboratory Accreditation Cooperation (ILAC) in the area of laboratory and inspection accreditation, and the Canada-based International Accreditation Forum (IAF) in the fields of management systems, products, services, and personnel. Both these organizations work together and coordinate efforts to promote accreditations and conformity assessments throughout the world.

The BAB obtained Associate Membership of Asia Pacific Laboratory Accreditation Cooperation (APLAC) in 2007, Affiliate Membership of International Laboratory Accreditation Cooperation (ILAC) in 2010, and Associate Membership of Pacific Accreditation Cooperation (PAC) in 2011. It has already started extending accreditations to some laboratories in the country and expects to widen its activities soon in line with the government's vision for a Digital Bangladesh. The Board hopes to obtain full membership of both ILAC and IAF within a short time, which will greatly facilitate exports of Bangladeshi products both in regional and international markets.

Source: Dr. Helal Indhin Ahmed, Joint Secretary to the government, Financial Express, 1 July 2012, p. 6.

Standardization practice in Bangladesh generally conforms to WTO rules, in terms of being non-discriminatory, least trade restrictive, and having a scientific basis. However, not all new measures are notified to the relevant WTO Committees—a feature that is not unusual, in particular for developing and least developed countries.

Bangladesh has no MRAs on SPS/TBT issues, but it has signed Memoranda of Understanding (MoU) with India and Pakistan. BSTI also has a Bilateral Cooperation Agreement (BCA) with India and has regular correspondence with the Indian Bureau of Standards (BIS). Moreover, MoUs with Nepal, Turkey, and Saudi Arabia are finalized but yet to be signed.

Bangladesh is also a member of the South Asian Regional Standards Organization (SARSO), a specialized body of SAARC, the objective of which is enhanced coordination and cooperation amongst SAARC countries in standardization and conformity assessment and the harmonization of domestic standards among the (eight) SAARC countries to facilitate both regional and global trade. SARSO also aims to build capacity and provide technical assistance to SAARC countries in developing standards, metrology, and conformity assessment procedures. SARSO also hopes to sign MoUs with ISO and the IEC by the end of 2015.

Experts from SAARC countries through Sectoral Technical Committees are involved in developing SAARC Regional Standards for about 35 products on a priority basis, of which seven standards have already been finalized including for refined sugar, biscuits, code of hygienic practices on dairy products, hessian, cotton twill, and cotton drill. It is expected that, within the next five years, a good number of standards will be harmonized by SARSO. That said, priority is given to existing international standards while formulating new domestic standards.

In terms of conformity assessment, Bangladesh has a number of elements of the necessary infrastructure in place. The Certification Wing of the BSTI deals with certification of conforming products, and has been accredited by the relevant authorities in India. Bangladesh used to require pre-shipment inspection of all imports, but that step has been abolished. Inspection is now undertaken by a set of public and private agencies. Responsibilities for conformity assessment are spread across a number of government agencies, the primary ones being the BSTI and the BAB. Private laboratories are also in operation, and this aspect is of particular importance in the garment and pharmaceutical sectors.

6.2.1.3 Impact of Technical Assistance and Capacity Building

Trade related technical assistance and capacity building have also contributed to the development of the standards infrastructure in the country in the last five years. Some of the funding agencies and programs include the following:

a) ISO, under a project entitled Institutional Strengthening (INS) of ISO members in developing countries;
b) UNDP, under a project titled Better Work and Standards Program (BEST) and also a regional energy efficiency initiative—Barrier Removal to the Cost Effective Development and Implementation of Energy Efficiency Standards and Labeling (BRESL);
c) SIDA and Swedish Standards Institution (SIS);
d) SAARC-PTB; and
e) UNIDO (Accreditation of BSTI Management Systems Certification systems).

Additionally, the EU has contributed €8.5m (85% of total contribution over 2006-2010) in a joint EU-UNIDO Europeaid project[6] to support the development of quality standards and quality management in Bangladesh in order to meet international standards.

As a result of this funding, the National Metrology Institute was set up in 2009, to ensure accuracy and traceability of various products, from food goods to highly engineered goods. The BSTI has also been strengthened to become effective in standard setting and dissemination, including the setting up of a modernized library and data communication services, and improved performance monitoring mechanisms. The BAB has also been established and is working on mutual recognition from international bodies, so that its certificates are internationally recognized.

These new systems are vital to diversifying exports. According to Ms. Ferdous Ara Begum of the Dhaka Chambers of Commerce & Industry (DCCI), "the EU program works in an area that our country really needs. We have been able to set up the National Metrology Institute, the Bangladesh Accreditation Board and strengthen the Bangladesh Standards Institute. These organizations are significant for a broad number of sectors, which require accurate and reliable measuring techniques". Ms. Ferdous Ara further highlights the economic impact of these developments. "This assistance will help Bangladesh to export a wider variety of products and enhance acceptability of Bangladesh products in the international markets. Industries in the local market will also benefit when better measurement techniques are available locally".

Other recent improvements include the promulgation of the Food Safety Act (FSA, 2013) that has led to all residual products coming under the ambit of standards. The BSTI also began One Stop Services in 2008-09, which is a major achievement as nothing comparable is present anywhere else in the country. There is a Citizen's Charter that documents all services that are to be provided under the BSTI's One Stop Shop.

6.2.1.4 Standards-Related Issues in Export Markets

Bangladesh faces significant issues related to SPS measures and TBTs in export markets, principally the EU. By one estimate, the percentage of exports facing NTMs in the EU, USA, and Japan was 91%, 94% and 68% respectively. Of these experts, most faced multiple NTMs: 93% in the EU, 91% in the USA, and 63% in Japan. Of total NTMs that affect Bangladesh's exports to these markets, SPS measures and TBTs account for most of the restrictiveness (96% in the EU, 95% in the US, and 64% in Japan).

[6] http://ec.europa.eu/europeaid/documents/case-studies/bangladesh_trade_quality-standards_en.pdf

Historically, SPS issues have been a particular constraint for some Bangladeshi exports, including fresh fruits and vegetables, and fish and crustaceans. The EU is a significant export market for these products. Recent data indicate that there has been some upgrading in these sectors: only four notifications of rejected shipments were made in 2015, down from 10 in 2010. Of course, the presence of any border rejections indicates that there are compliance issues in these important sectors. Moreover, it may be the case that significant quantities of these goods are not exported to the EU at all because producers know that they do not meet relevant standards and therefore risk rejection. There is no way to measure this effect, but it highlights the fact that in particular in the area of food handling and safety, Bangladesh still has some distance to travel in terms of promoting export competitiveness and upgrading production to meet international norms.

In relation to SPS, compliance issues for Bangladeshi exports center on health and safety issues. In particular, fisheries products are tightly regulated in the EU, and require the putting in place of appropriate hazard management systems. The issues that have arisen with border rejections suggest that Bangladeshi exporters have in some cases had difficulties complying with these requirements. More broadly, attention to product quality and freshness, as well as issues of hygiene and safety, is at the core of developing export competitiveness in sectors affected by SPS measures abroad.

For textiles and clothing, the key compliance issues are quality and uniformity. For retailers in the EU and USA to stock garments from Bangladesh, they need to be sure that they are of consistent size, in line with standards prevailing in the import market. A certain level of quality is also required, in the sense that garments must retain their color, and be able to sustain laundry treatment for a certain period. Minimum safety standards, for example relating to flammability, are also an issue, but more particularly in relation to certain categories of garments, such as baby clothes. Global buyers are able to exercise significant power to require that suppliers comply with these kinds of standards, and there is evidence that Bangladeshi producers are increasingly able to do so. Nonetheless, the environment is a very competitive one, with sources of low cost supply elsewhere in Asia, so standards upgrading will be important to maintain Bangladesh's position in key developed markets.

6.2.1.5 Policy Implications of Bangladesh's Experience

Experience in Bangladesh shows that developing countries face significant challenges in terms of setting up comprehensive standards and quality infrastructure. Even though Bangladesh is a populous country, there are significant resource constraints in terms of finances and capacity. As a result, it has needed to effectively leverage assistance from development partners and international agencies. Despite these challenges, there is a clear recognition on the part of the authorities that harmonization with international standards represents a sensible starting point for standardization work in many cases, and

can form the basis for upgrading industrial competitiveness in key industries, both primary and secondary.

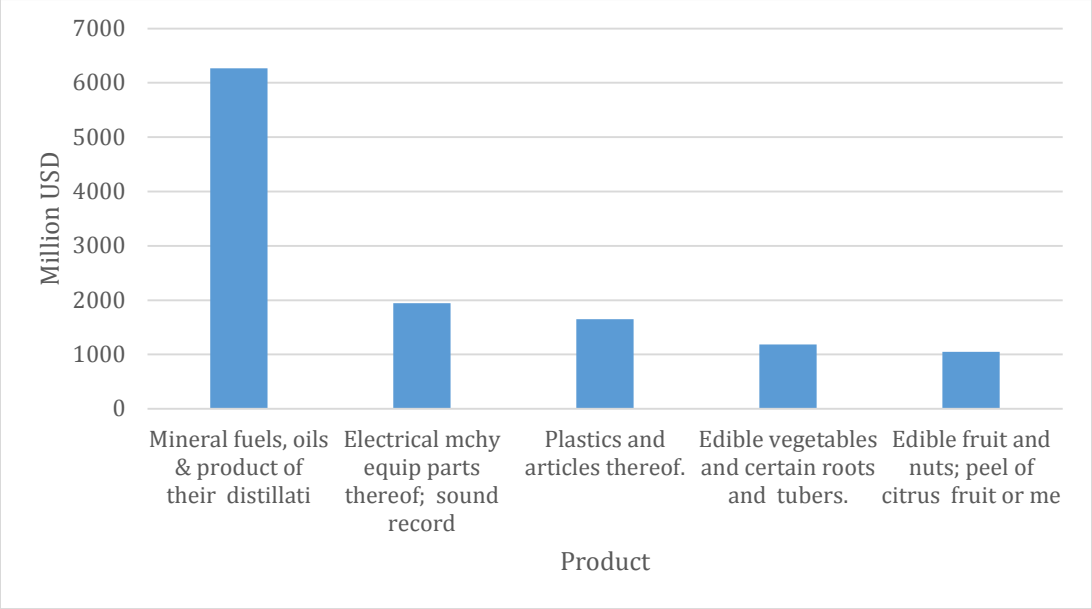
Although there has been some regional cooperation on standards within the context of SAARC, efforts are as yet nascent in this regard. Given that standards infrastructure is better developed in some neighboring countries like India, there may be scope for South-South capacity building in this regard. In any event, regional markets are important for exports of some goods, so standards cooperation could bear fruit in terms of improved prospects for Bangladeshi exporters. However, since the main markets for Bangladesh's key RMG industry are distant—the US and the EU, in particular—focusing on international standards makes commercial and policy sense, as it enables producers to meet the requirements of GVCs and lead firms that need products of consistent quality and characteristics. The Bangladesh example shows that international standards harmonization can be one way in which developing countries can go about upgrading their industrial structures in key industries where GVCs are prevalent.

6.2.2 Egypt

Egypt is a lower middle income country, with a per capita GDP of USD $10,530 in purchasing power parity terms in 2014. As such, it is considerably further up the income charts than Bangladesh and Senegal, the two other countries used as case studies in this report. Nonetheless, until the late 1990s, Egypt's standardization and quality infrastructure revealed a high degree of complexity, fragmentation, and lack of transparency, which can be attributed to inward-oriented policies going back to the 1960s. With the adoption of more open trade policies and the participation in several international organizations, in addition to preferential and regional trade agreements, the standardization and quality control system has witnessed significant improvements carried out by the government with the help of a number of international organizations and trade-related technical assistance programs.

Figure 38 shows that the composition of Egypt's exports is quite different from that of Bangladesh. Mineral oils and fuels dominate, but other products are also important, both manufactured goods and agricultural products. Another difference with Bangladesh is that the sources of demand for Egypt's exports are more varied, with a more important role played by developing countries, including India, as well as geographically relatively close countries like Saudi Arabia and Turkey (Figure 39).

Figure 38: Top five export sectors for Egypt, 2014



Source: WITS-Comtrade.

Figure 39: Top five export markets for Egypt, 2014

Source: WITS-Comtrade.

6.2.2.1 Standards Infrastructure

By contrast with many other countries, standards and quality infrastructure in Egypt is run exclusively by the public sector, and does not include any private law bodies. The main elements of the quality infrastructure in Egypt are the Egyptian Organization for Standards and Quality (EOS), the National Metrology Institute (National Institute for Standards-NIS), the Egyptian Accreditation Council (EGAC), and the General Organization for Exports and Imports Control (GOEIC).

EOS is the sole public entity responsible for standardization and quality control in Egypt. The organization was established under the name "Egyptian Organization for Standardization" according to presidential decree 29/1957 and became an ISO member in the same year. In 1979, the Quality Control Center was joined to EOS according to presidential decree number 392. Finally, the name was changed to become the Egyptian Organization for Standards and Quality under presidential decree 83/2005. The organization is currently affiliated to the Ministry of Trade and Industry and is funded by the latter, along with some non-governmental income mainly from sales of standards, and issuing conformity certificates and quality marks (USAID, 2006).

EOS develops local standards for products, testing and inspection methods, and equipment. It also issues conformity certificates and quality marks. It acts as an enquiry point for notifications under the WTO TBT Agreement and represents Egypt in different international standardization, quality, and measurement bodies. EOS also provides technical support and personnel training to a number of local and regional quality entities.

Since 1979, EOS has become the umbrella for two main departments that represent its main functions: the Central Department for Standardization, and the Central Department for Quality Control.

The Central Department for Standardization has so far issued around 10,000 national standards. It also works on the harmonization of local standards with international standards to reduce technical barriers to trade and to fulfill the requirements of its regional trade agreements, such as COMESA, PAFTA, and to access the European Market within the framework of the EU-Egypt Association Agreement. Standards are developed in 170 technical committees that include around 1,700 representatives of stakeholders from other ministries and the private sector. EOS has standards guides for textiles, chemicals, food, engineering products, documentation, and measurement.

As for quality assessment, the Central Department for Quality Control is responsible for granting four types of certificates:

a) The Egyptian Quality Mark: a voluntary mark indicating a high quality product, and based on the international norms indicated in ISO Guide 28/1982;

b) The Egyptian Conformity Certificate: a voluntary certificate issued by EOS to indicate conformity of the production patch of any product to the relevant Egyptian standard after conducting the required technical studies;
c) The Egyptian Conformity Mark is approved by EOS indicating conformity of the product to the relevant mandatory Egyptian standards for engineering products; and
d) The Halal Mark is issued to food products and some cosmetic products.

In addition to standardization and quality assessment, EOS has a General Department for Industrial Metrology, which is the official body in Egypt responsible for carrying out industrial metrology and measurements for mechanical, electrical, and physical measurements. The department's calibration laboratories are regularly standardized at the National Institute for Standards (originally the National Metrology Institute), established in 1962 to develop a metrology infrastructure in Egypt.

EGAC was established by presidential decree 312/1996 and is the sole national body for accreditation of certification bodies (systems and personnel), of inspection bodies, and of laboratories (testing and calibration). The council is headed by the Minister of Trade and Industry and its board is composed of 14 members that represent all stakeholders in other bodies and organizations. EGAC carries out accreditation functions in line with European and International best practice.[7]

The products conformity assessment infrastructure of the Egyptian industry is complex and fragmented by type of market. Voluntary conformity assessment activities are carried out by EOS Quality Control Department for goods produced inside Egypt. In the food sector, inspection bodies affiliated to Ministries of Supply and Internal Trade, Ministry of Health and Population, and Ministry of Agriculture and Land Reclamation carry out random inspection campaigns in the domestic market. Meanwhile, the General Organization for Export and Import Control (GOEIC) is responsible for inspection of imports and exports according to ministerial decree 770/2005 following Law 118/1975. Testing is also fragmented by type of market and by sector. There are a total of 154 accredited State-owned and private labs. While medical laboratories are entirely private and conform to EU regulations, most of the laboratories in the other sectors are State-owned. These belong to EOS Quality Control Department, the Egyptian Chemistry Administration, and the Industrial Control Authority for locally produced goods (chemicals, construction, food, engineering, and textile products), and to GOEIC laboratories for exports and imports. Concerning efficiency, problems related to long waiting lists and delivery times, needless repetition of tests and unavailability of some tests[8] have been reported. Another problem is the lack of

[7] Accreditation of testing and calibration practices is carried out according to ISO 17025, inspection according to ISO 17025, accreditation of medical labs according to ISO 15189, and measurement according to ISO 17021.

[8] In the marble sector, for example, slabs need to be sent to Spain for EU compliance tests.

accredited laboratories in potential export sectors to test physical properties (such as flammability of toys[9]) and mechanical quantities (tear test on toys) according to European standards. Egypt's public sector approach runs into limitations in this area: in most countries, private laboratories perform an important role in terms of testing. To loosen the bottlenecks companies are experiencing, Egypt will need to examine ways of increasing the number of testing laboratories, which is relatively low, including through appropriate use of the private sector, backed up by accreditation processes.

GOIEC currently has 26 offices and laboratories located at all the major sea and airports for import inspection as well as 11 others located throughout the country for export inspection. Inspection procedures have been unified by GOEIC since 2000 and are all undertaken in one phase. They are carried out in accordance with national standards issued by EOS, or with standards from other countries should local standards be unavailable. To further facilitate trade inspection procedures, new import/export regulations were issued in 2005, according to which importers are allowed to use certifications of conformity from any internationally accredited laboratory inside or outside of Egypt. Inspection performed by GOEIC can take up to several weeks, and 2-3 if performed by or by a private body that is recognized by GOEIC (OECD, 2010). GOEIC's accredited laboratories acquired ISO 9001/2000 certification in 2008.

The unification of the Egyptian domestic market and the present "import-export" market under a common market authority is necessary to guarantee compliance with international standards and enhance export performance. Yet, such a reform would put GOEIC and EOS in direct competition and would make it unclear how they should operate. Notification and rapid alert systems are also domains where EOS is still searching for international best practice support (European Commission, 2014).

In addition to the Egyptian quality mark, conformity mark, and Halal mark granted by EOS, there are other private entities that grant international certificates in management systems such as ISO certificates. In total, Egypt has twelve certification authorities, including EOS. It is difficult to be categorical about the appropriateness of this number, as there is a tradeoff between wide recognition and sectoral expertise. In any case, given the sectoral concentration of Egypt's exports, the number of certification authorities appears broadly appropriate, although issues such as time and cost need to be considered in deciding whether or not to alter this approach in the future.

Ministerial decree no. 180/1996 states that all imports must abide by Egyptian product standards, or international standards in case the former are unavailable. Ministerial Decrees no. 180/1996 and no. 291/2003 stipulate that in case there is no Egyptian standard for a product, one of the following

[9] Toys have been on the list of sectors subject to the ACCA agreement between Egypt and the EU.

international or foreign standards should be applied (in order of precedence): international standards (ISO/IEC), European Standards (EN), and if not available, British (BS), German (DIN) or French standards (NF), American National Standards (ANSI), Japanese Industrial Standards (JIS). For food products, Codex Alimentarius standards apply. The whole product or commodity must be subject to one standard only in all its items. This also applies to locally produced goods.

EOS has registered 1,816 companies with international quality systems certifications (300 in the textile sector, 290 in chemicals, 139 in engineering, 433 in food, 8 in medical, 628 in services and 7 in miscellaneous), 33 products certified as an Egyptian high quality product (EQM), and there are 75 companies with the Halal mark.

To date, EOS has issued more than 10,000 standards, of which around 10% are mandatory. Food, chemical, and engineering products have the highest share of standards. Within these sectors, the share of mandatory standards appears to be the highest in food products (more than 15%) followed by chemical and engineering products (around 5%).[10] The textile sector has the fewest mandatory standards, while measurement and documentation are not subject to any mandatory requirements. Generally speaking, all standards related to public health, safety, and consumer protection are mandatory. For the standard to become mandatory, a ministerial decree has to be issued by the Minister of Trade and Industry. An EOS standard may also be made mandatory according to a ministerial decree issued by the Minister of Agriculture or the Minister of Health. When health or safety are affected, these Ministers can issue regulations requiring particular specifications to be met and are entitled to mandate this regulation. These regulations can also be incorporated in the relevant EOS technical regulation.

Government bodies such as EOS, GOEIC and GOEIC-authorized private certification bodies are involved in conformity assessment. There are currently no product conformity assessment bodies accredited by EGAC under ISO EN 17065 and, therefore, product certification by EOS is not internationally recognized. Third party conformity assessment, as it is known in the EU, is also non-existing in Egypt (European Commission, 2014). To ensure compliance with EU regulations, exporters rely on local representatives of EU notified bodies, or have the conformity assessment performed in the EU.

According to Presidential Decree No. 392/1979, EOS is the national authority in charge of granting the Egyptian Quality Mark to industrial goods and products. The quality mark involves testing of the product as well as the inspection of the whole production line. Egyptian companies should therefore

[10] Based on estimations of interviewed EOS officials and from USAID (2006). Recent data on the exact number of mandatory and voluntary standards per sector are not publicly available.

obtain a certificate from EOS attesting the conformity of a sample to its proper standard specification. EOS testing laboratories are divided into four general departments with specialized laboratories:

- The General Department for Testing Chemical Products and Construction Materials
- The General Department for Testing Food Products
- The General Department for Testing Engineering Products
- The General Department for Testing Textile Products

Testing can also be performed upon the request of companies, for importers or exporters, and for other government control authorities.

Conformity assessment in one of the main components of the ongoing cooperation in the field of international harmonization carried out by Egypt with technical and financial assistance from the EU. International harmonization is part of a broader twinning project between European and Egyptian quality institutions (EGAC, EOS, and Metrology Institute). An ongoing project is concerned with raising the quality of these institutions and enabling the EGAC to accredit EOS for conformity assessment according to European and international standards.

Reviews carried out in light of the preparation for the ACCA show that most of the testing and conformity assessment is carried out by third parties, while manufacturers periodically submit samples for testing at the Quality Institute for extra assurance. The main reason is the limited testing capabilities of the Quality Institute. In the light of the ACCA, technical and financial assistance to the institute is essential for upgrading its conformity assessment capacity. Future plans also include the revision of the existing laws to issue a new law on conformity assessment of industrial and consumer products that includes elements of the EU regulations.

6.2.2.2 Harmonization

EOS, in collaboration with the Industrial Modernization Center (IMC), has worked on the harmonization of domestic standards with international standards systems to increase competitiveness of Egyptian products and boost exports. In 2010, all standards (8,500 at that time) were harmonized (OECD, 2010). In this regard, the harmonization process is based on ISO/IEC Guides 21-1:2005 and 21-2:2005, European Directives (CEN and CENELEC), and Egypt's TBT Agreement commitment. Standardization is also adapted to the regional development of standards (AIDMO), and foreign standards like ANSI, ASTM, and JIS. International standards are usually adopted by EOS, given a national number, translated to Arabic and published by EOS as a domestic standard.

In the food sector, the current share of domestic standards adopted from Codex Alimentarius is estimated at 70%. As for engineering and medical products, standards systems are often entirely based on ISO regulations. In these sectors, EOS (as an active member) has an obligation to notify ISO of any deviations in domestic standards.

EOS represents Egypt in a number of international standardization bodies. Egypt became a member of ISO with the establishment of EOS in 1957 and is currently an active member (P-Member or O- member) in 295 ISO technical committees. Egypt is also a full member of IEC in 74 technical committees (P-Member in 69 committees and O- Member in 5 technical committees) through the national mirror committee in the Ministry of Electricity, and a member in the International Organization for Legal Metrology (OIML) through the NIS, in the African Organization for Standardization (ARSO), the European Organization for Quality (EOQ), the International Measurement Confederation (IMEKO), and the European Committee for Standardization (CEN). There is a Memorandum of Understanding with the American Society for Testing and Materials (ASTM). EOS issues unified Arab standards in cooperation with the Arab Industrial, Development, and Mining Organization (AIDMO), and has signed memoranda of understanding with equivalent bodies in China, Uganda, the United States (ASTM), France, Germany, the United Kingdom, Ukraine, Australia, and Kenya, in addition to 16 Arab countries. However, Egypt does not have any mutual recognition agreements for standardization or conformity assessment activities.

Egypt established a Central Department for WTO Affairs in 2003 (before which it had been the WTO Unit since 2000) to monitor Egypt's rights and obligations under the WTO. In 2003, Egypt established both the TBT and SPS national sub-committees under the auspices of the Supreme national committee headed by the Minister of Trade & Industry. The subcommittees are comprised of all the relevant governmental and non-governmental stakeholders, with main functions including:

- Monitoring Egypt's rights and obligations under the WTO TBT/SPS Agreements.
- Discussing TBT/SPS trade concerns both on the import and export sides.
- Ensuring appropriate coordination among all Egyptian entities involved in formulating Egypt's TBT/SPS measures.

The Central Department for WTO affairs acts as a member and the technical secretariat of these two national subcommittees and the Supreme national committee. It also acts in close coordination with both the SPS and TBT Egyptian enquiry points.

The EOS is the national TBT enquiry point and notification authority of Egypt; it serves to make information available to all users and to answer questions and inquires. It is also committed to submit notifications on changes in technical regulations and standards.

The Central Administration for Foreign Agricultural Relations at the Ministry of Agriculture and Land Reclamation acts as the Egyptian SPS Enquiry point and National Notification Authority EP/NNA. The Ministry of Agriculture and Land Reclamation has also established an SPS committee to tackle the scientific and technical aspects of SPS issues to be raised under the SPS national sub-committee that is under the auspices of the Supreme national committee headed by the Minister of Trade & Industry.

To further enhance coordination and cooperation and recognizing the importance of transparency and predictability, Egypt has devised a national coordination mechanism established by the Prime Minister decree no. 2489/2007 to ensure enhanced transparency on Egypt's TBT and SPS measures and to address other WTO members TBT/SPS notifications. This mechanism aims at establishing systemic coordination procedures in the context of Egypt's SPS/TBT national subcommittees among the Central Department for WTO Affairs, the Egyptian TBT/SPS enquiry points and the different stakeholders to ensure addressing the Egyptian and other WTO members' TBT/SPS in an appropriate, systemic, and transparent manner. This mechanism has in fact enhanced the procedures to notify all Egyptian TBT/SPS related new measures as well as draft and modified ones. In SPS, Egypt has submitted 94 notifications (including addenda, corrigenda and revisions) since 2005 until the end of 2015 (available on the WTO website). In TBT, Egypt has made 146 notifications (including addenda, corrigenda and revisions) since 1998 until the end of 2015.

As far as mandatory standards are concerned, domestic products and imports must both be inspected for conformity with Egyptian mandatory standards according to Ministerial Decree 179/1996. In this regard, there is no discrimination between locally produced and imported goods. With the harmonization of Egyptian standards with international standards, the remaining mandatory standards are mostly related to health and safety, and are less likely to be trade restrictive. However, local producers arguably face discrimination when it comes to inspection against voluntary standards. According to Ministerial Decree 180/1996, domestic products are to be inspected against the Egyptian standard or an international standard of choice. For imports not included in the mandatory list, inspection against Egyptian or international voluntary standards occurs only if a commodity is listed in Annex 8 to Ministerial Decree 275/1991. Imports not listed in this Annex face no inspection when entering Egypt, an option that is not available to local products. This discrimination implies that domestic goods (including those with an export potential) are often subject to more inspections and compliance requirements, which may have a negative impact on exports.

Inspection and conformity assessment procedures for imports have been significantly simplified since the late 1990s and have become more transparent. Existing decrees spell out details of sampling and cost, introduce a formal appeals process, exempt frequent importers with a clean record, and allow GOEIC to recognize and accept inspections conducted in agencies outside Egypt (USAID, 2003). The main problem is, however, related to the dichotomy of inspection and conformity assessment bodies in charge of markets for internal supply and for imported goods. As explained previously, the market for imports and exports is controlled by GOEIC. Meanwhile, EOS and other authorities are in charge of the internal supply market. Traded products may not be treated equally as conformity assessment bodies are totally separate and have different work methods.[11] Domestic goods are inspected in laboratories of the Ministry of Health, the Society for Chemistry, or the Industrial Control Authority, and certified for conformity by EOS. In the "market" for imports and exports, all of these functions are assumed by GOEIC. There is a probability that, despite initially common rules and standards set out by EOS, possible discrimination between domestic and imported goods may occur.

In 2004, Egypt started the process of harmonization with international standards and had entirely harmonized its 387 mandatory standards in addition to 1,000 voluntary standards by 2005. An additional set of 1,000 voluntary standards was harmonized in 2006 (Egypt Business Intelligence Report, 2014). Ministerial decree 130/2005 also clearly separates mandatory standards related to health, safety, and the environment from other measures. Egypt is also bringing its domestic regulations in line with European legislation in selected manufacturing sectors and withdrawing any conflicting national standards to support manufacturers in their exports to the EU (OECD, 2010).

However, there are currently 10,000 Egyptian standards, 1,000 of which are mandatory standards issued by EOS. Although the plan to expand sectoral coverage and continue the harmonization process is clearly stated by EOS as one of its missions, there is no precise information on the progress so far.

6.2.2.3 Impact of Technical Assistance and Capacity Building

Since the entry into force of the EU-Egypt Association Agreement in 2004, the EU has provided Egypt with over €80m in trade-related assistance.[12] The EU being Egypt's largest trading partner, it is in the national interest to enhance its quality infrastructure to increase and maintain its access to EU markets. In light of the EU-Egypt Association Agreement, Ministerial Decree 263/2001 was issued to prepare for

[11] This problem has been discussed in a background report on the EU-Egypt Twinning program of quality infrastructure (2014, unpublished) as a potential cause of discrimination against imported products.

[12] Website of the Delegation of the European Union to Egypt
http://eeas.europa.eu/delegations/egypt/eu_egypt/trade_relation/index_en.htm

a National Quality Plan. This plan involves the modernization of EOS, EGAC, the Industrial Control Authority, and the Society for Chemistry, in addition to other ministries and organizations concerned with quality. The quality plan is also part of a broader strategy for industrial modernization aimed at raising the competitiveness of Egyptian products and improving conformity with international standards and requirements, and at assisting existing and potential private sector enterprises to perform in a more liberalized and competitive environment. Within this framework, the Industrial Modernization Center affiliated to the Ministry of Industry and Trade provides assistance to private sector enterprises in the field of standardization, metrology, and quality testing (Egypt Business Intelligence Report, 2007). In this regards, the National Quality Institute (NQI) has also been established, with the objective of developing individual and institutional capabilities in quality and disseminating the quality culture in industrial sectors, by carrying out training programs and consultative services.

The Egyptian quality infrastructure has benefited from a number of technical assistance programs leading to successful transformations of its components. A previous EU-Egypt twinning project was carried out to support reorganization and merger of all accreditation institutions into one Egyptian accreditation body, EGAC, to support the international recognition of the Egyptian conformity assessment practices. Presidential Decree 248/2006 approved EGAC as the sole accreditation body in Egypt. More specifically, EGAC benefited from a technical assistance program by the United Kingdom Accreditation Service (UKAS) for technical assistance to comply with international requirements (ISO/IES guides 58, 61, 62, 65, and 66 as well as ISO/IEC TR 17010 and 17020). In 2009, EGAC achieved full recognition by both the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF). Recognition is renewed on a four-year basis according to performance. EGAC is also an associate member in the European Cooperation for Accreditation (EA), and carries out accreditation assessment services in the Middle East and North Africa region in cooperation with UKAS.

EGAC currently benefits from technical assistance within the second phase of the EU-Egypt twinning of quality infrastructure program, under the umbrella of the Support to the Association Agreement Program (SAAP), and as part of the €20m Trade and Domestic Market Enhancement Program launched in 2014.[13] The Italian and German accreditation bodies (ACCREDIA and DAkkS respectively) provide assistance in this regard.

Expected outcomes of the SAAP twinning program are: to achieve full harmonization of Egyptian standards with international practice and to improve testing and conformity assessment so as to

[13] The objective of this program is to assist the Ministry of Industry and Trade in the implementation of key policy reforms to help Egypt further integrate into the global and regional economy. The program includes a number of complementary twinning initiatives to support the national quality infrastructure in Egypt (EGAC, EOS, NIS). Most of the fund- related projects are in the pipeline.

facilitate international recognition of the EOS; to enable Egyptian companies to obtain conformity assessment services tailored to specific markets such as the EU; and to develop institutional capacities through modern management systems and capacity development. Also, the National Metrology Institute is due to commence implementation of a twinning project for legislative and technical reform in the field of metrology in line with the relevant European best practices in standards, norms, and processes (European Commission, 2014). These objectives are in the framework of the ongoing negotiations on the Agreement on Conformity Assessment and Acceptance (ACAA) in priority industrial sectors (construction products, electrical appliances, pressure equipment, medical devices, and gas appliances). Enhancing these sectors should boost Egyptian exports to the EU market and enhance the integration of the Egyptian economy in its regional markets. The ultimate objective is to support Egyptian manufacturers to use the ACAA agreement for better exporting to EU.

In addition to the twinning program, a number of technical assistance programs are currently under implementation.

a) The MENA Star Project funded by the Swedish International Development Cooperation Agency (SIDA) and organized by ISO to support institutional capacity and standards development process to enhance business and industry in the MENA region, with a time span of four years (2013-2017);
b) The Quality Infrastructure for Sustainable Development and Trade Capacities Project is carried out the PTB German Metrology Institute. EOS will benefit from the upgrade of two testing laboratories in wood and furniture, and chromatography. The project also promotes regional cooperation in this domain. More generally, the project involves raising the awareness of ministries, chambers of commerce, and business associations of the importance of quality infrastructure in the context of trade promotion and enhancing competitiveness of SMEs (PTB, 2015); and
c) The UNIDO Energy Efficiency Program to qualify factories and industrial plants for the ISO 50001 certification.

Apart from the EU technical assistance programs, USAID has launched a three-year Trade Facilitation Project (TFP) with a budget of USD$10.9m in 2011. The program includes, among other objectives, enhancing the Egyptian standards infrastructure, streamlining Egyptian mandatory standards and promoting Egyptian exports. Due to political unrest between 2011 and 2013 the project could not be completed, and it appears that few activities were undertaken apart from some meetings on the subject of food safety (TFP, 2015).

In relation to exports of agricultural products, the government has undertaken significant efforts to comply with SPS measures in order to boost exports, and has also benefited from technical assistance programs to serve this objective. In 2007, the Ministry of Agriculture and IMC launched an Agriculture Export Promotion Strategy with the objective of identifying strategic crops for agricultural exports and developing a ten-year agricultural exports promotion plan. To enhance compliance with international standards and SPS measures, the government has been working on enhancing the role of quality assurance bodies in enforcing strict SPS standards for exports, in addition to launching the Pesticide Residue Program (IMC, 2007). Another important step was to disseminate information on compliance to exporters on the GOEIC website.

In 2004, Egypt benefited from a five-year technical assistance program by UNIDO, the "Farm to Fork" Traceability Project for Agricultural Products. Funded by an Italian-Egyptian Debt-for-Development Swap program, UNIDO established the Egyptian Traceability Centre for Agro-Industrial Exports (ETRACE). ETRACE developed product-specific traceability manuals and trained more than 600 national experts to make agro-industrial exports safer, more competitive, and compliant with stringent market standards and regulations of the EU (UNIDO, 2011). Initial assistance focused on 11 products, involving 47,000 growers and about five million workers and over 100 processing and packing houses in the Nile delta. Assistance was also given to the Plant Quarantine Department and to the National Pesticides Database. ETRACE also assists food manufacturers and helps minimize the spread of contagious plant and animal diseases through early detection while tracking the food chain, and improves supply-chain management and efficiency (International Trade Forum, 2010). Given the substantial impact on the development of Egypt's agro-industrial sector, the project has been institutionalized into the Egyptian "Agriculture and Agro-Industrial Technology Centre", affiliated to the Technology Development Sector of the Ministry of Trade and Industry.

6.2.2.4 Standards-Related Issues in Export Markets

Three main issues stand out as obstacles to Egyptian exports in general: certification, testing, and labeling requirements. While EOS has established a comprehensive database of international standards and incorporates in any requirements for a large number of sectors and with a high level of detailing, the major obstacle for exporters is to ensure compliance with these standards in light of the existing quality infrastructure. On the one hand, EOS has undertaken significant efforts to streamline and harmonize standards according to international systems. Lack of *de facto* compliance has – however - been reported by some agencies providing technical assistance to EOS while reviewing the Egyptian standards in detail. Lack of de facto compliance with international standards represents therefore a major hindrance not only for exporting firms, but also for firms with an export potential (especially small and medium-size enterprises) for which it is more difficult to communicate with EU trade

representatives if they wish to gain access the European market. Another problem for Egyptian exporters is the great variety of quality standards applied across the Arab world and by other trade partners in Africa and Asia, in addition to strict standards applied by the EU, making exporting to more than one destination very costly. Exporters are often reluctant to comply to EU standards while there are other export destinations with less restrictive product quality requirements. Concretely, Egypt shows a high level of use of international standards in a regulatory sense, but businesses on the ground are constrained by the need to meet requirements in diverse export markets.

Apart from standard-related trade barriers, a number of procedural obstacles- at home and at the destination market- have been reported. These can be summarized under complex procedures, large number of required documents to be issued by several government authorities and lack of coordination between these authorities, bureaucracy and delays at customs clearance points and lack of facilities at the ports. Below is a brief description of Egypt's main exports and a summary of non-tariff measures affecting trade in these.

Chemicals

Egypt's main export destinations for chemicals are the European and Arab markets, which account for nearly 70% of Egypt's total exports of this category. While exports to Arab countries seems less restricted, exporters face a number of standard-related difficulties when exporting to the European market, which are mainly related to lack of compliance with protection of human health and environment measures. Difficulties reported by top exporters of chemical products[14] highlight the lack of awareness of certification requirements according to EU standards and difficulties to register in the REACH[15] process through an intermediate EU agent, especially for exporters from small and medium enterprises. Measures related to packaging and labeling have been reported as another important trade-related barrier. At-home border measures are also significant for this sector. For example, exporters often encounter sudden changes in regulations pertaining to banning exports of certain inputs, increase or imposition of new tariffs on some final products or intermediate goods at the custom's clearance points, which are usually not communicated to exporters in advance.

Textiles

[14] Based on communication with the Head of Department for chemical products at the Ministry of Trade and Industry and a report by one of the leading exporters of chemical products (KAPCI paints Egypt).
[15] REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals. It also promotes alternative methods for the hazard assessment of substances in order to reduce the number of tests on animals. (Source: European Chemicals Agency (ECHA)).

In the textiles sector, Egypt's exports to the EU represent nearly 40% of its total exports of textile products. The USA and Arab countries are also important trade partners. In the framework of the second phase of the Technical Assistance for Policy Reform Program (TAPR II), the USAID has recently accomplished harmonization of regulations of textile and apparel products with American and EU standards. As a result, the number of regulations affecting Egyptian textiles and apparel was cut from 1,048 to fewer than 20, and textile exports are expected to perform better in the future.

Food (fresh produce and processed)

Exports of vegetable products to the European market remain subject to a number of restrictions. Egyptian exports of food (fresh produce) are generally oriented towards the Arab market, and are recently finding their way into the African markets. Obstacles encountered by companies exporting agricultural products include SPS measures, in addition to requirements of labeling and packaging, the latter being one of the main obstacles to intra-Arab trade of food (processed and fresh produce). Many companies struggle with the amount and level of detail required on the label, as well as the way in which information should be presented. To many companies, customizing labels to meet different and sometimes mutually exclusive requirements entails unnecessary costs (ITC, 2015).

As to exports to the EU market that fall under this category, Egyptian authorities responsible for conformity assessment and certification are not yet accredited according to European regulations, which limits the export potential to EU markets. Despite continuous efforts taken by the Ministry of Agriculture and the Central Authority for Plant Quarantine (CAPQ), lack of compliance with SPS measures have caused several incidents of exports ban, such as seeds and bean sprouts after an E-coli outbreak and baby potatoes after discovery of brown rot during inspection at the EU borders. Restrictions expired in March 2012 and were not renewed due to the measures taken by Egypt in compliance with the EU Food and Veterinary Office's recommendations. Additionally, import conditions for potatoes from Egypt we simplified (European Commission, 2013). Exporters of fresh food produce and export promotion authorities generally report various difficulties to comply with EU imposed restrictions pertaining not only to hygienic measures and traceability, but also to packaging and labeling, in addition to restrictions on weight and size per unit of fresh fruit or vegetables. The absence of accreditation of the Central Authority for Plant Quarantine (CAPQ) of the Ministry of Agriculture to perform conformity assessment according to EU standards continues to represent one of the major issues of concern. In this context, a twinning project between the CAPQ and equivalent EU authorities is currently being designed. Additionally, the USAID funded TAPR II program includes a current project for Egyptian small growers, designed to help Egyptian farmers comply with GlobalGAP and FairTrade standards in order to access international fresh produce markets. The project works with small producer associations in establishing

sorting, grading, and packing facilities that meet international food safety and quality criteria (USAID, 2015).

In addition to human safety and traceability issues limiting access of Egyptian processed food to EU market, other obstacles facing food exporters more generally are related to conformity assessment and certification. There is no Food Safety Authority in Egypt. Regulations, inspections, and laboratory testing are currently conducted by a number of different agencies under several different ministries in Egypt. As a result, food safety enforcement is inefficient and haphazard (USAID, 2011). The Chamber for Food Industries has been therefore pushing the government and the Ministry of Trade and Industry to establish an Egyptian Food Safety Authority as the sole authority responsible for testing, conformity assessment and certification of food products exports, in addition to the issuing of a Unified Food Law. Action on this issue has been pending since 2011. Another recommendation highlighted by top firms in the food industry is the effective harmonization of Egyptian food standards with international standards to avoid duplication of investments by market, in line with transforming Egyptian mandatory standards not included in international systems into rather voluntary or guiding standards. Establishing a new organization that pulls functions from other ministries will encounter a number of obstacles related to bureaucracy. The advantages of having a unified Food Safety Authority are- however- significant, and is expected to play an important role in enhancing compliance of food exports with international standards.

Apart from barriers related to lack of compliance, a number of procedural obstacles are also encountered by exporters at home and at the border in export markets, particularly in intra-Arab trade of food (fresh produce and processed). According to a recent survey by the International Trade Centre (ITC, 2015), home-based procedural obstacles include delays during pre-shipment inspections carried out by the Customs Authority and other export and import control public institutions, lack of cooling and storage facilities and administrative burdens (such as a large number of documents). In the partner country, bureaucratic procedures including delays associated with red tape have been reported.

Machinery and electric appliances

Exporting companies in this sector cite strict environmental standards and product safety measures. The survey carried out by ITC in Egyptian and other Arab markets generally points to the lack of understanding and complying with product quality requirements (ITC, 2015). Ongoing preparations of the ACCA between Egypt and the EU are therefore expected to enhance compliance with EU standards and boost Egyptian exports in this sector. The choice of products under machinery and electric appliances to be covered by the ACCA seems confusing. These products do not represent an important share in Egypt exports in general, and to the EU in particular. The choice of these products is – however-

justified by the fact that harmonizing these with international standards will be acceptable and less costly, these sectors being new to the Egyptian industry and hence starting their production and export in compliance with EU standards since the beginning would be feasible and less resisted by manufacturers.

6.2.2.5 Policy Implications of Egypt's Experience

In the past seven years, Egypt has achieved major advances in the area of compliance with TBT and SPS measures. The institutional quality framework has undergone significant improvements, with well-established standardization, accreditation, and metrology bodies, and a progressive harmonization with international standards. EOS has succeeded in raising exporters' awareness of compliance with international standards, translating them into Arabic. Local producers also benefit from a more transparent interface through a widely accessible website.

To ensure compliance of manufactures with international standards and to increase Egyptian exports, it is necessary that EOS obtain accreditation for ISO 17065 activities for product certification. Another important achievement would be to reorganize the quality infrastructure in Egypt so as to avoid the dichotomy in inspection and conformity assessment between the internal supply market and the market for imports and exports. In this context, coordination between EOS and GOEIC should be strengthened and rules consolidated, or conformity assessment should be placed under one authority in order to avoid possible discrimination between domestically produced goods and imports. Finally, there could be benefits for Egyptian producers if the obligation to assess domestic products (but not imports) on conformity with voluntary standards were to be eliminated.

In the agricultural sector, the Agriculture Development Strategy Plan and related technical assistance from international organizations helped raise awareness and compliance with international health and safety standards. However, a number of domestic and external factors limit compliance of exporting firms (especially SMEs). A closer cooperation between the Ministry of Agriculture and the private sector is therefore needed.

Lack of compliance with international standards is caused by a number of reasons related to the nature of the sector, the area of non-compliance, the export markets, and the internal quality infrastructure.

In the industry sector, non-compliance is often caused by internal factors. Manufacturers have little or no experience with assuming conformity assessment responsibilities on their own. At the same time, the quality infrastructure bodies in Egypt are reported to have little role in assisting these potential exporters because of unavailability of export-market tailored standards. Even in the sectors where

recognition of conformity with EU standards is being negotiated, there are challenges related to non-compliance of these sectors with EU safety standards.

In the agriculture sector, the causes of non-compliance are multiple. They can be product specific, such as the failure to comply with SPS measures and requirements imposed by Egypt's main trading partner, the EU. The number of SPS measures imposed on Egypt increased exponentially from 18 in 2006 to 888 in 2012, where all SPS measures on products actually exported by Egypt (vegetables, beans and seeds) came from European countries, and were justified by food safety and protection of humans, animals, and plants from pests and diseases (El-Enbaby *et al*, 2014).

Non-compliance with European SPS measures is mainly related to pesticide residue in fruit and vegetables. In the past, white fly infections in citrus and brown rot in potato exports have been major causes of detention. To face this problem, two Ministerial Decrees had been issued in the past to mandate good production techniques and biosafety of agricultural products. The Ministry of Agriculture and the Ministry of Industry and Trade have also issued the organizing rules for potatoes, groundnuts, vegetables (beans, onions, and garlic), fruits (grapes, citrus, strawberry, and cantaloupe), and cut flowers. These decrees specify the locations that are permitted to grow exportable crops and determine types and sources of seeds as well as methods of seed treatment and pest control for crops and soil (IMC, 2007). The impact of such measures seems, however, limited. EU notifications of non-compliance of Egyptian exports with food safety requirements rose from 36 in 2011 to 55 in 2014 (RASFF, 2014). Although there has been an increase in the number of notifications, that could be related to increased stringency on the European side—an issue Egyptian exporters, and the quality infrastructure supporting them, need to deal with.

In the processed food sector, compliance with safety measures remains a major problem and the possibility of accessing the EU market remains limited. To meet international requirements on protection of human health, improvements in hygiene standards are required throughout the value chain. This includes farms, transportation, processing, and packaging. The necessary resources to ensure compliance with such requirements are substantial and require significant training as well. This has resulted in a recent trend to export food products to less restrictive African markets, especially with the decline in exports to some PAFTA members since the beginning of political unrest in the region.

Another cause of non-compliance is related to the complexity of the internal quality infrastructure. Abu Hatab and Hess's (2013) survey results suggest that agricultural export firms suffer from the multiplicity of export inspection and supervision authorities, and the persistence of outdated laws and regulations that are not in accordance with current domestic and international practice. Conformity assessment is carried out by different entities in the local and export markets, with different rules and

procedures. This lack of coordination makes it difficult for local producers to comply with standards in both domestic and export markets, despite the continuous efforts to harmonize Egyptian standards with international standards and strictly apply food safety and SPS measures.

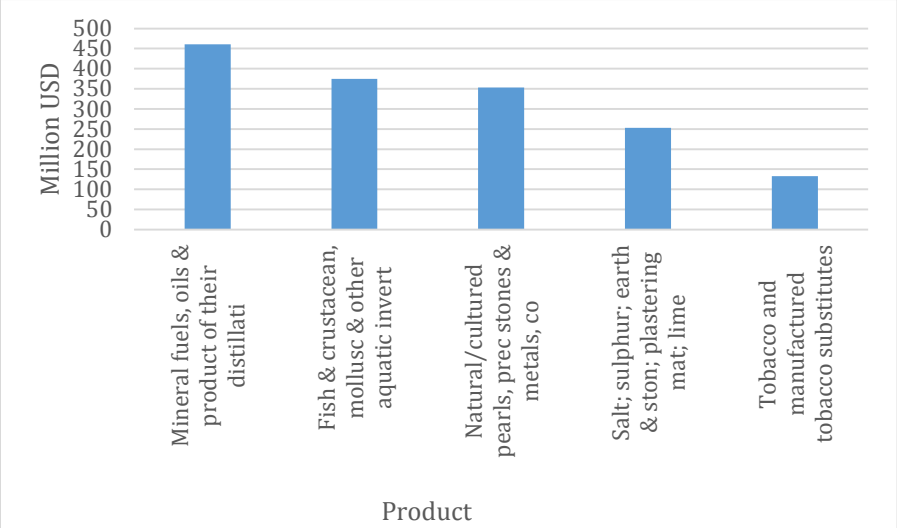
Egypt's experience shows that leveraging internal and external resources can provide a sound basis for moving forward on harmonization with international standards. Having historically been noted for its difficulties in the area of non-tariff measures like product standards, Egypt has made substantial progress towards a more transparent and competitive regulatory regime by making explicit use of international and foreign standards. Focused technical assistance has helped, but the difficulty of coordinating rules, regulations, and procedures across a large governmental apparatus has been the cause of some challenges that will need to be addressed in the future—and which may, for similar reasons, be relevant to other OIC member states.

6.2.3 Senegal

Senegal is a Least Developed Country with a per capita GDP of USD$2,270 in 2014, in purchasing power parity terms. Agriculture is an important part of the country's economic structure, and poverty remains a serious issue in rural areas. In recent years, Senegal has been involved in a major program of upgrading its national quality infrastructure, including through the use of international standards. It has leveraged external assistance—both technical and financial—and is in the process of building up standards capacity across a wide range of areas. However, as a small country, resource and skill constraints remain serious, and much remains to be done to build up a globally competitive export sector using standardization as part of the industrial base.

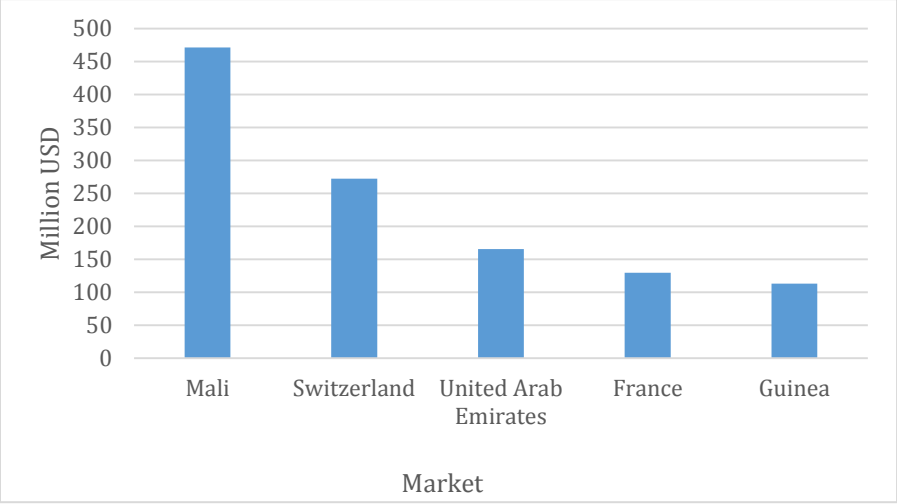
Figures 40 and 41 show the sectoral and geographical composition of Senegal's exports. Consistent with its development level, Senegal is highly reliant on primary commodities in its exports; manufactured goods are relatively less important than in Bangladesh and Egypt. In terms of export markets, Senegal exhibits a mixture of regional and extra-regional trade links. Close partners are important in aggregate terms, but European countries also represent a significant source of export demand. The latter point is important because European countries typically have strict standards in the crucial agricultural sector, whereas regional partners usually have rudimentary standards regimes and considerable enforcement difficulties.

Figure 40: Top five export sectors for Senegal, 2014



Source: WITS-Comtrade.

Figure 41: Top five export markets for Senegal, 2014



Source: WITS-Comtrade.

6.2.3.1 Standards Infrastructure

Standardization in Senegal is governed by Decree 2002-746, which provides the major guidelines for the country's quality infrastructure. The Senegalese Association for Standardization (ASN) is the key organization. Established under private law, but under the supervision of the Ministry of Industry, it is

the body responsible for issuing Senegalese standards. The ASN is funded largely by government, but also by the sale of standards, training, and other sources. The organization is Senegal's National Enquiry Point under the WTO TBT Agreement, while an agency of the Ministry of Agriculture has been designated to play that role under the SPS Agreement.

Up to the present time, standardization has been gathering momentum in Senegal, but the total number of standards issued is still relatively small by international standards, totaling 444 (Table 2). Of those, 144 are in the agricultural sector—a key part of the national economy, and a sector seen as having considerable export potential provided that issues such as quality and consistency can be dealt with. In all, ASN has 13 technical committees—a relatively small number, but in keeping with the agency's limited resources.

Table 4: Sectoral distribution of ASN standards

Sector	Number of standards
Electrotechnical	30
Construction	83
Agriculture	144
Environment	89
Commerce	4
Chemical	51
Solar energy	19
Household energy	5
Health	19

Source: ASN

Of ASN's 444 standards, only 32 are mandatory. The rest are voluntary. This approach is in keeping with the global trend towards voluntary standards, and indicates that despite the difficulties it faces, ASN is making a serious effort to support Senegalese primary and secondary industries by putting in place a modern standards system as part of broader efforts to develop quality infrastructure. However, private sector take up of standards is an issue. Although mandatory standards are relatively widely used

because of their compulsory nature, voluntary standards are perhaps used less than 50% of the time—a serious issue for the competitiveness of Senegalese firms looking to enter international markets.

In addition to issuing standards, the ASN also takes part in certification activities. However, the inspection and certification landscape is somewhat fragmented, with the Ministry of Agriculture and the Fisheries Directorate exercising jurisdiction over products within their respective purviews. Inspection sites are established at land border crossings and at Dakar airport. Certification can be in terms of Senegal's own standards or foreign standards. There is no organization in Senegal responsible for systems certification, so the gap is filled by overseas organizations including the French standards agency (AFNOR) and SGS. Although it is important to ensure that certification bodies have sectoral expertise, Senegal's approach—given its relatively low level of standardization—may be unduly fragmented, which creates confusion and cost for businesses. As a short term measure, the government could consider whether or not it is appropriate to favor some small degree of consolidation, until quality infrastructure is more developed.

Senegal does not have a national metrology institute, but a governmental reflection is currently underway looking at the possible establishment of such a structure in the future. Although there are some laws on the books—one dating from the colonial era—dealing with weights and measures, there is no dedicated framework for metrology in the country. The existing legal framework is no longer adapted to the needs of a modern quality infrastructure.

Laboratory structures are also lacking in Senegal. There is no official testing laboratory, although there is one private laboratory that performs testing functions. This capacity will need to be developed in the future, as a key part of quality infrastructure. It is foreseen that testing infrastructure will be developed in tandem with metrology infrastructure. The National Testing Laboratory (LEN) is not yet operational due to the lack of an appropriate statute. Nonetheless, there is a variety of private laboratories that test particular products, in the absence of an overarching official structure.

Similarly, Senegal does not have accreditation facilities. At this stage, when organizations need accreditation, they use foreign organizations, most commonly the French COFRAC. Although this is a sensible approach given the lack of domestic facilities, it results in high costs. An important step forward for the region would be the operationalization of a regional structure for accreditation (SOAC, under the ECOWAS umbrella), but this is still an issue for the future at the present time.

Among the challenges faced by the ASN, two loom large: insufficient financial resources, and a relative lack of involvement of the private sector. The first is common in the developing country context, and is an area where technical assistance and capacity building can help. The second is a more serious

impediment to using standardization as a basis for upgrading national productive capacity, as it implies that take up rates within industry are probably relatively low—a factor that could help explain the difficulty Senegal has had in entering global markets, in particular the European Union. Senegalese exports have been the subject of RASFF notifications for food safety issues in recent years, and although the rate is declining—from 14 in 2012 to 9 in 2014—the number is still to be taken seriously in the context of a relatively small export base, and the importance of the European Union as a destination market. Moreover, recent research has revealed the existence of reputation effects, which mean that a single rejection can carry over to other shipments and affect the future pattern of trade (Jouanjean et al., 2015).

In terms of standards and quality infrastructure, Senegal is part of an important regional movement under the UEMOA umbrella. Regulation No. 01/2005/CM/WAEMU establishes the following permanent regional quality promotion bodies:

a) the West African Accredication System (SOAC);
b) the Regional Standardization, Certification, and Quality Promotion Secretariat (NORMCERQ);
c) the West African Metrology Secretariat (SOAMET); and
d) the Regional Quality Coordination Committee (CRECQ).

However, development of these institutions on the ground and their use to fill the gaps in Senegal's own national quality infrastructure remains a challenge. To date, the regional approach to quality infrastructure is promising, and could bear fruit if sufficient technical and financial resources are made available by member states and development partners.

As the preceding discussion indicates, conformity assessment can be a challenge in Senegal due to the fact that core elements of the national quality infrastructure are still in the development phase. Concretely, a number of laboratories are involved in testing, both government-run and private bodies. Responsibility for conformity assessment is therefore shared between the public and private sectors. This area is one that is expected to develop in the future, particularly with the support of UEMOA's regional programs on quality infrastructure.

6.2.3.2 Harmonization

Cognizant of its obligations under the WTO Agreements, Senegal has been careful to ensure a maximum possible level of international harmonization of its standards, nearly 80%. Sources of international norms include the most common ones, ISO, IEC, and the Codex for food products. In line with this commitment to international standards, Senegal allows the sale of foreign goods in its market if there is no relevant national standard, provided that they comply with an international standard, or the

prevailing standard in the exporting market. Senegal therefore makes extensive use of international and foreign standards in its practice, in a way that should facilitate trade in line with WTO objectives.

Despite serious constraints of technical and financial capacity, ASN endeavors to take part in the work of regional and international standards organizations. As a member, it participates in seven ISO technical committees and all technical committees of the ECOWAS and ARSO regional organizations. It also takes part in the work of the Standards and Metrology Institute for the Islamic Countries.

An important aspect of the international standards harmonization agenda in Senegal is the regional dimension. UEMOA is developing a regional quality infrastructure, which encompasses the various aspects discussed in this report. Progress is ongoing, but much remains to be done. Working regionally is an attractive option for small, low income countries because it opens up the possibility of pooling technical and financial resources in an optimal way. ARSO has also been active in harmonization at the pan-African level, having issued over 700 standards. Its work was effectively suspended for a period, but it appears that it is now gaining momentum again. Finally, ECOWAS has been engaged in harmonization work since 2012.

Clearly, an important challenge for Senegal against the background of these various initiatives is to maintain its commitment to international—as opposed to simply regional—harmonization. To the extent that regional efforts can help crystallize international norms as regional practice, then the participation of regional structure is obviously to be welcomed, and could be of significant assistance to a country like Senegal. In any case, Senegal is fully involved in regional efforts, and sees the UEMOA quality infrastructure initiative as key to development of the national standards landscape in the coming years.

Concretely, UEMOA has adopted harmonization regulations covering various aspects of standardization and quality infrastructure, focusing on pesticides (Regulation No. 04/2009/CM/UEMOA), plant and animal health and food safety (Regulation No. 07/2007/CM/UEMOA), and plant seeds and seedlings (Regulation No. 03/2009/CM/UEMOA). Typically, these initiatives privilege the use of international standards on a regionally harmonized basis. This development is a positive one for Senegal, as it builds on the country's own record of using international standards whenever possible. UEMOA has also developed rules for mutual recognition of conformity assessment and testing, but there is evidence that foreign certificates are often not recognized as they should be at border crossings, which leads to costly re-testing. The West African single market is far from complete in this regard: see Maur and Shepherd (2015) for a detailed analysis of the case of food staples trade in the region.

6.2.3.3 Impact of Technical Assistance and Capacity Building

Technical assistance, primarily from the European Union, continues to be an important factor in the development of standards and harmonization in Senegal, given the severe constraints under which national institutions operate. Since 2014, the EU has provided Euro 12m to support development of regional quality infrastructure, through three phases of assistance. Activities include support to the development of the elements of national quality infrastructure that are lacking in Senegal, as well as helping roll out the regional dimension of quality management. Looking forward, technical assistance is likely to focus on assisting Senegal to develop its quality infrastructure in line with UEMOA regional plans, including development of institutions and practices—like certification—that are relatively under-utilized at the present time.

The Senegalese authorities are currently seeking to develop additional partnerships, looking beyond the EU assistance just referred to. The International Trade Center is looking to be of assistance with TBT issues, so that is one direction that might be explored in the future. For the present, the development banks have not been active in the development of quality infrastructure and standardization in Senegal—something that can perhaps be remedied as this issue becomes more salient in a range of developing countries in the future, particularly given the rise of the GVC paradigm where the ability to conform to standards—and demonstrate conformity by certification—is key to joining in the international fragmentation of production.

6.2.3.4 Standards-Related Issues in Export Markets

Fish is an important sector for the Senegalese economy.[16] The EU has historically been an export market, but with the advent of stricter standards controls there under the HACCP program in the 1990s, the country needed to upgrade performance in order to meet the new requirements. In the 1990s, compliance with EU standards cost the Senegalese industrial fishing sector CFAF 14.7 billion. However, half of this amount was provided by a grant from the French Development Agency. Nonetheless, the compliance costs involved remained substantial. Progress has been notable: a new institutional mechanism has been developed with a recognized authority in charge of compliance; laboratories have been upgraded; the sector has been restructured at the firm-level; and training has been provided in both the public and private sectors. Against this background of progress, it is important to keep the costs in perspective. On an annual basis, they amounted to around 3% of export earnings. Moreover, the additional cost of CFAF 50 per kilogram of exported fish generates CFAF 1,714 in foreign exchange

[16] http://siteresources.worldbank.org/INTRANETTRADE/Resources/Topics/Standards/CostsComplianceSenFish.pdf.

earnings. This is an example of the ways in which stricter standards abroad can, over the medium term, generate gains for local industries, provided that appropriate supporting structures are in place.

Another important sector is agriculture, specifically horticultural exports. Standards have consistently become stricter in the EU over recent years, but Senegal has succeeded in boosting exports in this environment. As in the case of fish, stricter EU standards led to restructuring in the industry, and a partial shift from smallholder production to large-scale integrated estate production. Overall, the effects of rapid export growth in this environment have been strongly poverty reducing, an important insight in an LDC like Senegal.

6.2.3.5 Policy Implications of Senegal's Experience

Senegal's experience with international harmonization of standards is potentially instructive for other small developing countries among the OIC's membership. First, the regional dimension is key: development of quality infrastructure is resource intensive, and leveraging regional cooperation can be one way of achieving critical scale to make key developments realistic. Of course, it is important that regional partners be committed to international—not just regional—harmonization. Senegal has demonstrated its own commitment in this regard, in a way that has clear implications for other small countries at various development levels: in most cases, it will be beneficial for such economies to adopt international standards because they rely heavily on international markets as sources of demand, thereby making the export competitiveness rationale set out above particularly compelling.

A second implication of Senegal's experience is the need to seek out appropriate development partnerships to develop quality infrastructure. Senegal is by no means unique in lacking some key aspects of quality infrastructure, and having to rely on interim solutions, such as the use of foreign organizations at higher expense. Targeted technical assistance and capacity building, combined with a regional approach, can help deal with these kinds of problems. However, there are indications that major sources of development finance, such as the multilateral banks, may need further sensitization to the importance of standards and harmonization as issues that go to the core of export competitiveness, particularly in the era of GVCs.

The final policy lesson that can be drawn from this case study is that even a small, low income country can adopt a modern approach to standardization, relying heavily on voluntary standards and using a private law body as the core agency. This setup is an element of international best practice that finds an echo in the Senegalese case. Of course, the rate at which standards are developed is necessarily slower than would be the case in a larger, better resourced country—Senegal has just over 400 standards, compared with 10,000 in Egypt, for example—but the general approach of relying heavily on

international standards such as those from ISO, IEC, and the Codex is a positive development. Assuming progress can be made under the umbrella of regional approaches to improving quality infrastructure, it will be possible for Senegal to lay the foundations for export competitiveness in key markets, particularly the EU. Of course, private sector up take of standards is a key issue that needs further work: spreading information not only on the existence of standards, but on their potentially beneficial effects in terms of market access, will be an important priority going forward.

6.3 Non-OIC Member State Case Studies

6.3.1 Asia-Pacific Economic Cooperation

The 21 member Asia-Pacific Economic Cooperation (APEC) combines large and small economies at different levels of development. It accounts for over half of world GDP, and covers about one-third of the global population. APEC economies recognized early on that differing national standards and conformity assessment procedures could hold back the trade and investment integration agenda. In 1994, member economies decided to establish the Sub-Committee on Standards and Conformance (SCSC),[17] a body in which they can exchange views and develop common work programs in this important area. Alignment with international standards is seen as one way in which APEC economies can facilitate trade, both among themselves and more broadly with the full set of global trading partners.

Unlike many other regional integration platforms, APEC does not adopt binding agreements. Rather, its approach can be thought of as "concerted unilateralism": member economies agree on common regional targets, typically broad in scope, to which they all then work towards with the exact measures left within the discretion of governments. Although targets are increasingly quantified, progress is assessed on a region-wide basis, not economy by economy in most cases. There are no consequences for failing to meet a target as there is no dispute resolution mechanism in APEC. However, economies typically take APEC targets seriously and make firm commitments to take concrete actions to work towards them, based on a system of peer review and a common commitment to free and open trade and investment in the region.

Another particular aspect of regional integration under the APEC aegis is the idea of "open regionalism". Traditional regional integration arrangements, such as free trade agreements, are "closed" in the sense that they provide defined benefits to members, and exclude non-members. This approach can give rise to concerns about trade diversion. APEC's approach is different, in that members typically (although not always) undertake reforms that benefit all trading partners, not just other APEC member economies. In

[17] http://www.apec.org/Groups/Committee-on-Trade-and-Investment/Sub-Committee-on-Standards-and-Conformance.aspx.

this sense, APEC is an "open" forum in that encourages policy reforms on a de facto most favored nation basis.

In line with this approach, APEC as a forum does not issue harmonized standards. Nor does it legally require member economies to use international standards. However, the SCSC encourages member economies to adopt international standards, in line with APEC's vision of open regionalism, and in furtherance of WTO commitments.[18] Member economies established a number of priority areas for alignment of national standards with international norms: electrical and electronic goods; food labeling; rubber gloves and condoms; machinery; and information technology equipment. In 1995, the SCSC published an APEC Guide for Alignment of Standards with International Standards. Target dates for completion of the alignment process vary according to sector and development level, but in the initial areas mentioned previously, 2008 was the latest date for alignment of national standards with international ones. SCSC (2005) indicates a strong level of progress among member economies even as of that date (Table 3).

Table 5: Alignment with international standards in APEC

Area	Percent Alignment
Electrical and electronic appliances	100%: 12 economies.
Food labeling	75%-95%: 6 economies.
Rubber products	<50%: 1 economy.
Machinery	Not reporting: 2 economies.
IEC 60335	100%: 15 economies.
CISPR Standards	75%-95%: 1 economy
Standards and guides on conformity assessment	50%-75%: 1 economy
IEC 60950	<50%: 2 economies
	Not reporting: 2 economies

Source: SCSC (2005).

[18] This section draws on SCSC (2005).

Drake (2011) provides further evidence on APEC's performance on alignment with international standards, particularly in the area of electrical products. He finds that by 2010, 15 out of 21 APEC member economies reported 100% alignment with IEC standard 60065 on safety requirements for electrical equipment. That number was up compared with previous years, which tends to indicate progress by economies on alignment of their standards with international norms in this important area. The share of trade covered by the standard increased markedly over the period considered by Drake (2011): in 2006, only 14.9% of television imports by value were covered by the relevant international standard, compared with 94.5% in 2009. More generally, by 2010 APEC economies reported between 91% and 100% alignment with the 168 identified IEC standards covering electrical goods.

The SCSC also encourages member economies to participate in the work of international standardization bodies, and facilitates technical assistance and capacity building for developing member economies. In addition, it has a work program on mutual recognition of conformity assessment. This latter program encourages member economies to accept test results from foreign laboratories as equivalent to those produced by domestic ones, thereby reducing costly double testing requirements for exporters. Mutual recognition of conformity assessments is an important adjunct to harmonization, as evidenced by the inclusion of both in the APEC standards work program.

As noted at the outset of this report, standard setting is just one activity that takes place within a country's national quality infrastructure. Analogously, APEC's SCSC takes on board the views of five Specialist Regional Bodies (SRBs) that represent different aspects of the regional quality infrastructure in the Asia-Pacific.[19] First is the Pacific Area Standards Congress (PASC), a forum that brings together national standards bodies. It serves to facilitate the exchange of views and experience on standards-related matters, as well as to coordinate in relation to international standardization. PASC also supplies technical experts for capacity building assignments. On the metrology side, the relevant SRBs are the Asia-Pacific Legal Metrology Forum (APLMF) and the Asia-Pacific Metrology Program (APMP). Together, these agencies facilitate the harmonization of metrology standards around the region, and undertake technical assistance and capacity building in developing member economies. They also coordinate closely with international metrology forums. There are also SRBs for accreditation, the Pacific Accreditation Cooperation (PAC) and the Asia Pacific Laboratory Accreditation Cooperation (APLAC), which foster the development of laboratories and inspection bodies, contribute to the harmonization of accreditation practices in the Asia-Pacific, and facilitate the mutual recognition of accredited test, measurement, and inspection results.

[19] https://www.aplac.org/documents/brochure/0430_MSC_longform_250309.pdf.

Although APEC economies have enjoyed some success in bringing about greater alignment of domestic standards with international ones, they have also encountered challenges.[20] The point is particularly true for developing economies, which make up the bulk of APEC's membership. On the one hand, the capacity of national standards bodies can sometimes be an issue. The sheer volume of standardization taking place at the international level means that it is often impossible for smaller organizations to follow all relevant developments, and participate adequately in the elaboration of new norms. More fundamentally, some APEC economies have had to address the issue of standards culture: in some cases, standard setting has traditionally been a public sector activity, whereas international standard setting bodies are typically established under private law. The distinction between mandatory and voluntary standards is also relevant. In a general sense, it has been important for APEC to bring about a greater level of involvement by the business community in standard setting, including alignment with international standards.

Another issue developing member economies have faced is differences in technology. The latest international standards sometimes deal with technologies that are commonly used in Europe, North America, and Japan, but developing economies may use technologies that were current in those places years or even decades earlier. As such, the applicability of international standards may be an issue. Although there are still potential benefits from harmonization, they are tempered if levels of technology are so different that the new international standard is simply irrelevant to the way some firms do business. This issue is one that is posed for all developing countries, not just APEC members, and no doubt is felt by OIC member states at different levels of per capita income.

At the present time, the SCSC has a number of projects and initiatives underway, in line with its overall objective of supporting the alignment of APEC member economies' standards with international standards, and developing mutual recognition of conformity assessments:

a) In collaboration with the Small and Medium Enterprise Working Group, the SCSC is developing a work program on the specific challenges faced by SMEs in the context of standards and certification, particularly with regard to GVCs;
b) In APEC, standards harmonization is seen as an element of a broader work program on Good Regulatory Practices. Various organs within APEC continue to develop that stream of work, and it supports the SCSC's more focused attention on alignment of national standards with international norms.

[20] http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/Background%20Papers/Supporting%20Documents/SRB%20Paper-%20FinalR1_.doc.

c) A multi-year project is currently underway to develop food safety laboratory testing capacity in the region. The initiative has used targeted capacity building programs, and has fostered dialogue between food safety regulators and industry stakeholders. In addition, the SCSC is developing guidelines to facilitate the harmonization of pesticide maximum residue limits—an issue that is typically a thorny one in the context of consumer and environmental protection. The APEC approach is to favor Codex limits, or those of a trading partner in particular cases, thereby making this emerging area an additional one in which the SCSC is helping promote the alignment of national and international standards.

d) The SCSC has also worked on capacity development of standards professionals, to prepare them for the next generation of challenges in this area, in the context of broader concerns with quality infrastructure. Although relevant for economies at all development levels, the issue is particularly pertinent for developing member economies, which make up the majority of APEC's membership.

6.3.2 Association of Southeast Asian Nations

The ten-member Association of Southeast Asian Nations (ASEAN) brings together countries at a variety of development levels, from high income Singapore to low income Cambodia. Seven ASEAN countries (as well as the one observer) are also member economies of APEC. As a result, the standards agenda in those countries is influenced by what is going on in APEC, in addition to ASEAN-specific initiatives. This subsection focuses on ASEAN's own actions on standards, as a complement to the information presented in the previous subsection.

ASEAN is currently working towards implementation of the ASEAN Economic Community (AEC). As part of that process, there is a work program on non-tariff measures, including product standards.[21] The objective is to favor harmonization and mutual recognition of standards. Unlike the European Union, which has adopted a highly formalized approach to the harmonization of standards, along with the development of regional institutions, ASEAN's approach is that countries voluntarily assign non-tariff measures for reform, including standards harmonization.

In 1997, 20 products were identified as priorities for standards harmonization within ASEAN.[22] This process was completed in 2003, using international standards in all cases. A second initiative regarding the electrical products sector started in 1999 and was complete by 2004. Again, international standards were used as the baseline for regional harmonization.

[21] This section draws on ASEAN Secretariat and World Bank (2014), and Pettman (2013).
[22] http://www.asean.org/news/item/harmonization-of-standards-in-asean-2.

Outside this framework, current evidence suggests that ASEAN's progress on product standards has been relatively limited. Member states have largely not been ambitious in scheduling non-tariff measures—including product standards—for reform. Mutual recognition, upon which a considerable amount of hope had been based, has been limited to a small number of sectors, namely cosmetics, electrical goods, and telecommunications products. Progress on international harmonization—as opposed to regional harmonization—has therefore largely been a matter of unilateral rather than concerted action. The result is that the standardization landscape differs markedly from one country to another.

The main institutional body dealing with standards and conformity assessment in ASEAN is the ASEAN Consultative Committee for Standards and Quality (ACCSQ), established in 1992. There are also working groups on standards and MRAs, accreditation and conformity assessment, legal metrology, and sectoral committees on electrical products, cosmetics, foodstuffs, automotive products, traditional medicines and health supplements, medical devices, wood products, and rubber. These working groups have been active in the development of harmonized standards through the process discussed above. Table 6 shows progress through 2013.

Table 6: Progress on harmonization in ASEAN

Product	Number of Harmonized Standards
Electrical appliances	58
Electrical safety	71
Electromagnetic components	10
Rubber-based products	3
Pharmaceuticals	ASEAN Technical Dossiers and ASEAN Common Technical Requirement

Source: Pettman (2013).

Harmonization work is also underway in other sectors considered to be of economic importance for the region. They include: agro-based products, cosmetics, fisheries, pharmaceuticals, rubber-based products, wood-based products, automotive products, construction products, medical devices, and traditional medicine and health supplements. Agriculture-related sectors are of particular importance to a number

of ASEAN members, in particular the lower income countries.[23] Despite the interest in moving forward on food industry standards as part of a general strategy to boost competitiveness and exports, and particularly intra-regional trade, progress on harmonizing agriculture related standards has been challenging. Work has been ongoing under the auspices of the ACCSQ for ten years, and some advances have been noted, particularly at a structural level. However, efforts remain dispersed in some cases, and concrete outcomes in terms of an increased proportion of harmonized standards, preferably based on international standards, has yet to be seen, despite the imminence of the ASEAN Economic Community.

In the related area of mutual recognition of conformity assessments, ASEAN's way forward has been to be rely on government to government agreements rather than a truly regional approach. However, the ASEAN Framework Agreement on MRAs was signed in 1998, and provides a framework for member states to move forward on mutual recognition. As noted above, however, progress has been limited on a sectoral basis. Work on MRAs has accelerated since 2002, when the MRA for Electrical and Electronics was signed by Ministers.

ASEAN's goal in the area of harmonization and mutual recognition is expressed in the slogan "One Standard, One Test, Accepted Everywhere". This statement neatly summarizes the key policy objective in this area. ASEAN's example shows that regional structures can be helpful in promoting progress towards this goal. But it also shows the difficulties inherent in reaching agreement on standards-related issues in a diverse regional grouping.

Box 7: Standards and Vietnamese Seafood Exports

In addition to intra-regional harmonization and mutual recognition, some ASEAN countries have recognized that standards issues loom large for their external trade relations as well. One example is Vietnam, which is a significant producer of seafood. Vietnamese domestic standards for seafood are more lenient than those found in the main developed country markets, such as the EU. However, seafood produced according to Vietnamese standards are still regarded as safe for human consumption.

The approach adopted by the Vietnamese seafood industry is potentially instructive for other developing countries looking to break into large, high standard markets like the EU. Vietnam did not pursue a harmonization strategy, as it was felt that Vietnamese standards were adequate for the domestic market given the country's level of development; implementation of a harmonized standard would have required all domestic production to comply with it. Instead, the country pursued a dual regime: seafood destined for export to Europe is produced in line with EU standards, while production for the domestic market takes place according to Vietnamese standards. On occasion, goods originally

[23] https://foodindustry.asia/documentdownload.axd?documentresourceid=659.

destined for the EU market make their way onto the Vietnamese domestic market, in which case they sell at a premium to reflect their "export quality".

As a second part of this strategy, Vietnam recognized that testing and certification—more broadly, the procedures of conformity assessment—still posed a potential barrier to exports due to the requirement to test in European laboratories. The country therefore pursued an arrangement for mutual recognition of conformity assessments with the EU. After developing regulatory trust between the two trading partners, it is now possible for Vietnamese producers that produce export quality goods to have their seafood certified locally prior to export to the EU, which is a significant cost reducing factor.

This example shows the way in which one country can leverage experience with standards—in particular mutual recognition of conformity assessments—within a regional grouping to expand its own trade outside the region, including with large, developed markets where high standards are the norm.

Source:
http://siteresources.worldbank.org/INTAFRREGTOPTRADE/Resources/PN33_Regional_Standards_FINAL.pdf.

6.3.3 East African Community

The East African Community (EAC) consists of five partner states: Burundi, Kenya, Rwanda, Tanzania, and Uganda. All EAC members are low income countries, with the exception of Kenya, which became a lower middle income country in 2014. EAC members have taken important steps towards the reduction of intra-regional trade barriers by forming a customs union, and agreeing on a single market framework. However, trade remains hampered by non-tariff measures (Shepherd, 2010), including un-harmonized product standards.

Article 81 of the EAC Treaty provides for cooperation in the areas of standardization, quality assurance, metrology, and testing (SQMT). In 2006, partner states agreed to establish the East African Standards Committee (EASC), the peak body for regional harmonization of standards. Its remit is to conceptualize and monitor the implementation of harmonized standardization activities within EAC. Specifically, its functions are to:

a) "undertake and coordinate activities related to standardization, metrology, and conformity assessment;
b) develop and establish frameworks that advance compliance by the partner states with their obligations under the EAC SQMT Act;

c) set out priorities and prepare implementation programs with regard to standardization, metrology, and conformity assessment activities at national and Community levels consistent with the provisions of the EAC SQMT Act;
d) monitor and keep under constant review the implementation of the standardization, metrology and conformity assessment programs at national and Community levels;
e) submit standards, reports and recommendations to the Council on its own initiative or upon request of the Council concerning the implementation of the Treaty that affect standardization, metrology and conformity assessment;
f) establish procedures for the development, approval, gazetting and withdrawal of harmonized East African Standards including the adoption of these standards at the national levels;
g) establish liaison mechanisms with other regional and international organizations consistent with the objects of the EAC SQMT Act;
h) monitor and keep under constant review the effectiveness of the national WTO TBT Agreement enquiry points; and
i) hear appeals with regard to administrative measures for Compulsory Standards implemented in the Partner States."[24]

The EAC case is therefore distinct from the other non-OIC case study examples examined in this report in that there is a strong, formal legal structure for regional harmonization. The structure is similar to what is seen in the European Union, with CEN harmonized European standards. The focus is on aligning standards among EAC partner states at the regional level. The EASC has a mandate to develop and promulgate regional standards, based on discussions that take place under its auspices among representatives of the standards organizations from each country. Once harmonized standards are issued, national standards bodies are supposed to withdraw conflicting national standards, and ensure that the harmonized standard enters the domestic corpus. However, experience suggests that implementation of harmonized standards is a serious issue in EAC partner states. National standards bodies are slow to implement EAC standards as national standards, and to withdraw conflicting norms.

Despite these issues, the EASC has been active in developing harmonized regional standards. Before issuing a harmonized standard, it conducts a cost/benefit analysis that examines whether or not to regulate, and if regulation is needed, the form that it should take. Alternatives, including no regulation, are considered. This practice is an important element of standards development, but is difficult to implement in the developing country context where capacity and data availability are often limited.

[24] http://www.eac-quality.net/the-sqmt-community/eas-committee/mandate-of-easc.html.

According to EABC (2013), 1,250 harmonized East African Standards (EAS) were in place as of end-2012. However, the EAC Standard Management Committee (SMC) during its 3rd Meeting in October 2013 concluded that there are discrepancies in the reported number of harmonized standards. Nonetheless, the EASC has clearly been active in the development of regionally harmonized standards, as evidenced by its current catalogue.[25] Standardization activity differs from one sector to another, but has focused on the region's most traded goods. Harmonized standards are supposed to be reviewed regularly, but it is not clear that this process is in fact taking place as it should. The business community (EABC, 2013) highlights hundreds of instances where harmonization of differing national standards would be beneficial, and similarly where development or review of a harmonized standard would have commercial benefits for regional businesses. The formal approach put in place by the EAC to deal with standards harmonization has run into roadblocks in terms of national capacity constraints and implementation ability, as well as business uptake, particularly among SMEs.

Although the EAC has been active in regional harmonization, which is a type of international harmonization, it remains unclear what percentage of the newly issued standards are consistent with standards issued by international bodies like ISO, IEC, and the Codex. The issue is an important one, particularly from an export competitiveness point of view. Regional standards harmonization helps develop intra-regional trade by enabling companies to access the full regional market upon compliance with one standard. But if that standard is different from what prevails in major extra-regional markets, then business will not necessarily be competitive further afield despite the development of a regional economic base. Going forward, it will be important for EAC to pay further attention to the issue of international harmonization, in the sense of using norms issued by organizations like ISO, IEC, and the Codex as the basis for the development of harmonized EAC standards. Implementation on the ground will also need to be addressed.

Keyser (2012)[26] discusses East African harmonization efforts within the concrete context of food products. An important example is maize. Prior to harmonization in 2005, each EAC country maintained its own standard for maize, relating to issues such as the presence of moisture, foreign matter and contaminants, broken grains, and damaged grains. Taking Kenya as an example, Table 7 reproduces core requirements of the pre-existing Kenyan standard and the 2005 harmonized standard, with Codex rules reproduced for comparative purposes.

[25] http://www.eac.int/trade/index.php?option=com_docman&task=doc_download&gid=31&Itemid=124.

[26] http://siteresources.worldbank.org/INTAFRREGTOPTRADE/Resources/PN33_Regional_Standards_FINAL.pdf.

The first point to note is that the EAC standard introduces a quality-based grading system that was not present in Kenya (or indeed in any EAC country) prior to harmonization. The broad nature of this system is in keeping with practice in the industry, although precise requirements vary according to local conditions. Second, in some important respects, the harmonized East African standard is stricter than the previous Kenyan standard—in particular for high quality Grade 1 maize, but also in some cases for the lower quality Grade 2 product. Indeed, in some cases the EAC standard is even stricter than what is required by the codex. The rationale for this divergence is not immediately apparent, but it has frequently been noted that harmonization tends to be "up" in the sense of resulting in more restrictive standards than those that existed prior to harmonization. The reason has to do with the political economy of harmonization: no government wants to be seen as "lowering" national standards so as to allow better access for "inferior" foreign varieties. As a result, there is pressure to move to standards that mirror the most restrictive requirements in place among the harmonizing group.

Although there could conceivable be benefits for Kenyan consumers in having higher quality maize in the market, Keyser (2012) notes a major disadvantage: the East African standard is not in line with other standards prevailing in the region, particularly those in Zambia and South Africa. The Zambian system is of particular interest because as of 2012, that country had the world's largest surplus of non-genetically modified maize available for export. However, a significant proportion was produced by smallholders, who often face difficulties in producing non-discolored maize due to sun bleaching. The East African standard—which was stricter than both the Kenyan standard and the Codex on discoloration—therefore probably prevented some trade from taking place between Zambia and Kenya, despite significant demand for maize in the latter for both commercial and humanitarian purposes. This example illustrates that harmonization is not always and necessarily a trade facilitating measure: the substance of the harmonized standard matters. In addition, this example shows that although regions can move more easily towards harmonization than more disparate groups, it can sometimes be at the expense of exports from third countries—an undesirably side effect of the process from a global welfare point of view. Harmonization cannot therefore be seen as a panacea for reducing standards related trade costs, but is instead one approach that—if implemented on the basis of sound analysis and a consideration of its full range of effects—can potentially bring some benefits if the costs are simultaneously minimized.

Table 7: Kenyan and EAC standards for maize

	Kenya	EAC Grade 1	EAC Grade 2	Codex
Moisture content (max.)	13.5%	13.5%	13.5%	15%
Aflatoxin (max.)	10ppb	10ppb	10ppb	Set by Codex Commission
Aflatoxin B1	-	5ppb	5ppb	Set by Codex Commission
Fumonisin	-	-	-	Set by Codex Commission
Foreign matter	1%	0.5%	1%	1.5%
Inorganic matter	-	0.25%	0.5%	0.5%
Broken grains	2%	2%	4%	6%
a. Insect damaged grains	3%	1%	3%	7%
b. Rotten, diseased grains	4%	2%	4%	7%
c. Discolored grains	4%	0.5%	1%	2%
d. Other colored grains	2%	-	-	-
e. Live insect infestation	0%	-	-	-
f. Immature/shriveled grains	-	1%	2%	-
Total defective grain (a-f)		4%	5%	-
Filth	-	0.1%	0.1%	0.1%

Source: Keyser (2012).

7 CONCLUSIONS AND RECOMMENDATIONS

This report has examined the issues of international standards and harmonization from the perspective of the OIC's diverse membership. International harmonization is of importance to OIC member states for two main reasons. First, the WTO Agreements that deal with product standards give a special role to international standards: they are assumed to be genuinely regulatory in nature, as opposed to protectionist, and to constitute a means of regulation that does not unduly restrict trade. Countries can therefore leverage international standards as a way of ensuring compliance with their obligations under international trade law. Second, there is a strong export competitiveness basis for appropriately using international standards: they give access to a wide range of countries for payment of a single set of design and development costs, and so allow firms to reap economies of scale. Linked to this insight is the fact that international standards are particularly important in the context of GVC production platforms: lead firms need components that are of high and uniform quality, and which are interoperable with other components sourced from firms in different locations. Lead firms therefore often require their suppliers to be compliant with a range of international standards, which means that countries that are interested in helping their firms join and move up in GVCs have a strong interest in making appropriate use of international harmonization.

A review of SPS measures and TBTs in major OIC markets—focusing on key products for the three regional groups—shows that OIC countries' exports are subject to a wide range of standards-related measures. TBTs are prevalent across numerous sectors, and SPS measures are a serious issue for agricultural exporters. Although oil exporters are subject to fewer requirements than other countries because of the nature of their main product, primary and manufactured goods both typically must comply with a range of standards in import markets. Evidence from the case studies suggests that countries have varying capacity to meet those requirements. A country like Bangladesh has enjoyed success in international markets, but primarily in one sector. Intra-regional trade, where standards may not be as demanding as in the European and American markets, is important for Egypt and Senegal. Nonetheless, even regional markets can exhibit significant standards-related measures, as in the case of Nigeria where the electrical equipment sector is subject to a large number of mandatory standards. Taking all of these data points together, it is likely that most if not all OIC member states see their exports significantly affected by product standards. The export competitiveness rationale suggests that they have an interest in upgrading quality infrastructure, including through increased use of international standards.

Although data are not available for many OIC member states, the information that has been made available for the purposes of this report suggests varying degrees of harmonization with international

standards across countries. Some OIC member states have relatively high degrees of harmonization with international standards such as those issued by ISO, IEC, and the Codex. Others exhibit a lower degree of harmonization. Some countries allow goods into their markets if they comply with international standards and there are no applicable local standards, which is a type of de facto harmonization. However, standards and quality infrastructure remain underdeveloped in lower income OIC member states—a contrast with the situation in higher income countries, where the body of standards in force is significant, and there is evidence of real capacity in this area, including in relation to harmonization.

Given the important role played by international standards in many countries, including OIC member states, it is important to ensure that international standards bodies are as representative as possible. Participation of developing countries is particularly important. A lack of effective participation by developing countries in work of organizations like ISO, IEC, and the Codex is sometimes cited as a reason why there is a case to be made that many standards are better suited to developed, as opposed to developing, country contexts. A review of ISO, IEC, and the Codex shows that OIC member states have different approaches to membership and participation depending on the organization. Participation is weakest in IEC and strongest in the Codex. However, as the ISO example makes clearest, membership alone is not enough. It is also important for countries to be actively involved in these organizations technical committees and similar bodies where standards are debated and designed. Developing OIC member states are often active in only a few such committees in ISO, which greatly limits their ability to exercise an effective influence over the organization's work. Of course, small countries cannot expect to have the human and financial resources to participate in the same number of technical committees as large countries, so it is natural to choose based on the economic interest of different sectors. But even given this point, the evidence suggests that many poorer countries play only a marginal role in the work of international standards bodies. As a result, it may be difficult for them to ensure that the work product of those bodies is indeed appropriate to their developmental level and economic and geographical circumstances. There is surely a role for development assistance to play in helping facilitate greater participation by developing OIC member states in the work of ISO, IEC, the Codex, and other international standards bodies.

In terms of concrete examples of the use of international standards in the context of the OIC, this report looked at three case studies: Bangladesh, Egypt, and Senegal. These three countries are at different income levels, and have distinct trajectories in terms of the nature and extent of national quality infrastructure. They are also different in size, which has implications in terms of resource availability for standards and quality-related activities. Nonetheless, in all three cases, there is significant evidence that international standards play an important role as part of the overall context in which standardization activities take place within each country. Legal and factual harmonization are present to a significant

degree in all three countries. The case is particularly striking for a small country like Senegal, where national standards are relatively few, and international standards are used to fill the many gaps where national standards have not been passed. This practice—which is also present in other OIC member states—is consistent with the WTO preference for internationally harmonized standards, and is a sensible way of ensuring a degree of quality control for imported goods even when national standards infrastructure is under-developed.

In all three OIC case study countries, technical assistance and capacity building, largely from outside the region, have played an important role in the development of standardization practice and quality infrastructure. External funding can be important in terms of promoting the participation of lower income countries in international standards bodies, as well as for the development of standardization capacity at home. There are clear differences of capacity between Egypt, the case study country with the highest income per capita, and the other two countries: standardization infrastructure is more developed, there is a larger accumulation of standards practice, and there is the ability to ensure implementation at different points in the economy. In all cases, however, there is still room for technical assistance and capacity building to help the countries develop standards, including those based on international harmonization, and to ensure that they are implemented in practice on the ground.

One variable that changes markedly across the three OIC case study countries is the role played by regional initiatives. They are present for all three countries, but somewhat marginal in the case of Bangladesh, in keeping with the relatively low degree of regional integration in South Asia. Egypt is an intermediate case, where some regional arrangements deal with standards, but the overall impression—perhaps due to Egypt's size relative to the rest of its region—is that the agenda is largely national and international in focus. Senegal, on the other hand, is clearly engaged on a regional track through UEMOA in particular; the broader African initiative of ARSO has been relatively inactive for a significant period, although it may be regaining momentum. The regional approach makes sense for a small economy like Senegal, as creative arrangements for harmonization and mutual recognition can make it possible to effectively share the cost of developing standards infrastructure across the West African region, rather than each (small) country having to shoulder a disproportionately high bill itself. The regional approach appears promising, although implementation on the ground remains key—and is linked to broader issues of governmental capacity and reach within the region.

In addition to examining the issues generally and studying how they play out in OIC member states, this report also examined three outside case studies: APEC, ASEAN, and the East African Community. The rationale behind choosing three regional initiatives is that they could provide guidance for the OIC as a diverse group of countries looking to deal with standards to some extent collectively. Evidence of that

collective approach is present in the form of the SMIIC, as well as the interest that COMCEC has shown in supporting policy research on standards and harmonization.

The three outside case studies present very different approaches to collective work on standards and harmonization. APEC favors consensus-based targets in relation to international harmonization of national standards, but does not use legally binding instruments. ASEAN has included standards issues in some of its international instruments, and has worked on both harmonization and mutual recognition of conformity assessment. The EAC is the most formalist of the three groups studied, with a system that is similar in design to the one operating in the EU: a centralized regional standards body is tasked with developing harmonized regional standards, and national standards bodies are then supposed to implement them as national standards, and withdraw any inconsistent norms. Each group of countries has enjoyed variable success in terms of promoting harmonization.

This report's review of the evidence and policy issues suggests that APEC's approach might be the most informative for OIC member states. Although the SMIIC is a formal, legal body of a type not found in APEC, it has had difficulty in developing harmonized standards outside the halal food sector. It may therefore be possible for OIC member states to advance international harmonization by adapting APEC's model of collective targets. For instance, member states could choose a group of important sectors, and collectively commit to achieve a given degree of international standards harmonization by a certain date. The economic interest of doing so is clear, and the APEC example suggests that if countries are truly convinced of the rationale, it is possible to move forward effectively even without legal instruments and sanctions for non-compliance.

OIC member states can move forward on the international standards harmonization agenda in a variety of different ways. There is clear scope to bring economic benefits in terms of improved market access and export competitiveness by developing national and regional quality infrastructure, as well as by relying on international standards as the basis for national norms. Concretely, member states could give consideration to the following recommendations to improve their harmonization basis and reap these economic gains:

National Agenda:

1) Conduct an audit on national quality infrastructure, leveraging outside assistance—particularly from UNIDO—as appropriate;
2) Particularly in Africa and Asia, follow the global trend away from mandatory public standards and towards private voluntary standards, notably in manufactured goods sectors including electrical equipment and machinery;

3) Explicitly recognize the important role international standards play in the global and regional economic landscape, and commit to use international standards as the basis for national standards whenever practicable;
4) Commit to increase the proportion of national standards harmonized with international standards issued by organizations like ISO, IEC, ITU, and the Codex;
5) Promote adoption of the practice of de facto international harmonization, i.e. authorization for sale of goods that comply with international standards when no contrary national standard is in force;
6) Support the private sector, especially through publication and awareness raising, in their efforts to use internationally harmonized standards in practice;

Regional agenda:

7) Commit to reduce the standards burden affecting exports of key products by other OIC member states;
8) Reinforce regional structures for standards harmonization, and ensure that, whenever possible, regional standards are based on international ones;
9) Further develop mutual recognition of conformity assessments, including on a regional or pluri-lateral basis;
10) Participate actively in the work of the SMIIC, and support efforts to broaden its sectoral basis at the same time as emphasizing conformity wherever possible with international standards;
11) Develop programs of technical assistance and capacity building within the OIC structure to assist lower income and less developed member states to put in place key elements of national quality infrastructure, and implement internationally harmonized standards;
12) Provide resources to upgrade export competitiveness by leveraging international standards;
13) Leverage regional arrangements to promote standards harmonization, and more broadly to develop quality infrastructure; and
14) Mobilize resources to support the effective participation of lower income member states in the work of international standards bodies such as ISO, IEC, and the Codex, focusing on those areas of most economic interest.

REFERENCES

Abou Hatab, A., S.Hess (2013). Opportunities and Constraints for Small Agricultural Exporters in Egypt. *International Food and Agribusiness Management Review.Volume 16, Issue 4.*

Czubala, W., B. Shepherd, and J. Wilson (2009). "Help or Hindrance? The Impact of Harmonized Standards on African Exports." *Journal of African Economies*, 18(5): 711-744.

Drake, G. (2011). *Reducing Trade Transaction Costs: Harmonization of Standards and Conformity Assessments in APEC.* Document No. APEC#211-SE-01.11, APEC PSU.

East African Business Council (2013). *Report of the Study on the Prioritization of EAC Standards and Technical Regulations for Development, Harmonization, Revision, or Withdrawal*. Arusha, Tanzania: EABC.

Egypt Business Intelligence Report (2014). Egypt Business Intelligence Report. Practical Information, Opportunities Contacts. International Business Publications, USA

El-Enbaby, H., R. Hendy, C. Zaki (2014). Do product standards matter for margins of trade in Egypt? Evidence from firm-level Data. *ERF Working Paper no. 840*. The Economic Research Forum

European Commission (2013). Implementation of the European Neighborhood Policy in Egypt. Progress in 2012 and Recommendations for Action.

European Commission (2014). Support the Egyptian quality and regulatory environment in line with international best practice (EOS – Egyptian Organisation for Standardisation). Twinning Project Fiche. Support to the Implementation of the Action Plan and Association Agreement Programme (SAAP IV). The European Commission Delegation to Egypt.

European Commission (2014). Strengthening the Egyptian Organization for Standardization and Quality, and improving the Regulatory Framework of the Egyptian Quality Infrastructure. Support to the Association Agreement Program.

Guasch, J.L., J.-L. Racine, I. Sanchez, and M. Diop (2007), *Quality Systems and Standards for a Competitive Edge*. Washington, D.C.: World Bank.

IFC Issue Brief (2014). "Transforming Bangladesh's Garment Sector" http://www.ifc.org/wps/wcm/connect/f8968f8043a64b51a4f2bc869243d457/AM2014_IFC_Issue_Brief_Bangladeshi+Garment+Sector.pdf?MOD=AJPERES.

IMC (2007). Egypt Agricultural Export Strategy. Final Report. Industrial Modernization Center.

ITC (2015). Making Regional Integration Work, Company Perspectives on Non-Tariff Measures in Arab States, International Trade Center.

International Trade Forum (2010). Challenges in agri-food exports: Building the quality infrastructure. International Trade Forum - Issue 3/2010. International Trade Centre.

Jouanjean, M.-A., J. Maur, and B. Shepherd (2015). "Reputation Matters: Spillover Effects for Developing Countries in the Enforcement of US Food Safety Measures." *Food Policy*, 55(C): 81-91.

Maur, J.-C., and B. Shepherd (2011). "Product Standards in Preferential Trade Agreements" in J.-C. Maur and J.-P. Chauffour (eds.), *Preferential Trade Agreements and Development: Issues and Implications*, Washington, D.C.: World Bank.

Maur, J.-C., and B. Shepherd (2015). *Connecting Food Staples and Input Markets in West Africa: A Regional Agenda for ECOWAS Countries*. Washington, D.C.: World Bank.

McKinsey and Company (2011). https://wtiex01.wti.unibe.ch/owa/redir.aspx?C=mgWFweT6FUyxezYCKLbzQWkTAxqhoNII3bMAv2332FkrbiIIatmWkssthzqDrXWkqPoXRn-utQk.&URL=http%3a%2f%2fwww.mckinsey.de%2fsites%2fmck_files%2ffiles%2f2011_McKinsey_Bangladesh.pdf.

OECD (2010). Business Climate Development Strategy. Egypt: Trade Policy and Facilitation. MENA-OECD Investment Programme. The Organisation for Economic Cooperation and Development.

Pettman, S. (2013). "Standards Harmonization in ASEAN: Progress, Challenges, and Moving Beyond 2015". Discussion Paper 2013-30, ERIA.

RASFF (2014). The Rapid Alert System for Food and Feed 2014 Annual Report. The European Commission.

Sanetra, C., and R. Marban (2007). *The Answer to the Global Quality Challenge: A National Quality Infrastructure.* Braunschweig: PTB.

Shepherd, B. (2010). "Trade Performance of the East African Community: Gravity Model Evidence." Working Paper prepared for the World Bank.

Shepherd, B. (2014). *Product Standards and International Trade Negotiations: A Practical Guide*. Geneva: Trade Advocacy Fund. http://www.tradeadvocacyfund.com/toolkitsvol2.

Shepherd, B. (Forthcoming). "Product Standards, International Harmonization, and Export Diversification." *Journal of Economic Integration.*

Shepherd, B., and N. Wilson. (2013). "Product Standards and Developing Country Agricultural Exports: The Case of the European Union." *Food Policy*, 42: 1-10.

UNIDO (2011). *Egypt. Trace me up.* United Nations Industrial Development Organization.

USAID (2006). The Development and Implementation of Egypt TBT Inquiry Point: A Proposal for Technical Assistance for the Egyptian Organization for Standardization and Quality (EOS). United States Agency for International Development.

USAID (2003). Assessment of Egypt's Compliance with the WTO's Technical Barrier to Trade Agreement. Final Report. United States Agency for International Development.

USAID (2015). Agriculture and Food Security Fact Sheet.

APPENDIX 1: INTERVIEW INSTRUMENT

The purpose of this document is to provide the outline for a 20-30 minute discussion with government officials and other knowledgeable parties dealing with product standards. The focus is on international harmonization. The questions are designed to be starting points for a broader discussion, and the interviewee should be asked at the end if there is any supplementary or complementary information s/he wishes to provide. When precise quantitative data are not available, interviewees should be asked to provide "best guess" estimates based on their experience. The intended audience includes officials of national standards bodies, relevant line ministries (trade, industry, and agriculture), and potentially representatives of private sector peak bodies (chambers of commerce).

1. Which elements of a national standards infrastructure does your country have in place? Which organizations are run by the public sector, and which by the private sector?
   a. Standards body, and other organizations that promulgate mandatory or voluntary product standards?
   b. Metrology institute?
   c. Accreditation board?
   d. Testing laboratories?
   e. Inspection bodies?
   f. Certification bodies?
2. How many mandatory product standards has your country issued to date? Is it possible to have a sectoral breakdown, even if approximate or impressionistic?
3. How many voluntary product standards has your country issued to date? Is it possible to have a sectoral breakdown, even if approximate or impressionistic?
4. What proportion of your country's product standards are mandatory, and what proportion are voluntary?
5. What proportion of your country's product standards are promulgated by public bodies, and what proportion are promulgated by private bodies?
6. What proportion of your country's product standards are based on, or equivalent to, standards issued by international bodies like ISO or the Codex Alimentarius?
7. Does your country allow the sale of products that comply with standards issued by an international organization or another country (if so, which) if there is no relevant domestic standard?
8. Does your country have any mutual recognition agreements:
   a. For standards?
   b. For conformity assessments?

9. Does your country have any other agreements for standards cooperation with other countries, including through regional and preferential trade agreements?
10. Does your country play an active role in the work of any international standardization bodies, such as ISO or the Codex Alimentarius? If so, please describe it.
11. Does your country regularly notify new technical regulations and sanitary or phyto-sanitary measures to the relevant WTO Committees? Are government officials in relevant ministries aware of the notification obligation?
12. Does standardization practice in your country conform to WTO standards, in particular in terms of being non-discriminatory, the least trade restrictive measure available, and having a scientific basis in the case of certain measures?
13. Have there been any significant developments or improvements in your country's standards infrastructure (general or sector-specific) over the last five years? Please describe them.
14. To what extent has trade-related technical assistance or external funding (multilateral or bilateral) played a role in any improvements or developments described in the previous question? Which agencies were involved, and what did they do?
15. How do you expect your country's standards system to evolve over the next five years? What improvements are likely? In particular, do you expect to see increased reliance on international standards, for example through harmonization?

APPENDIX 2: LIST OF PEOPLE INTERVIEWED

Farooq Ahmed, Bangladesh Employers Federation and Metropolitan Chamber of Commerce and Industry, Bangladesh.

Nesar Ahmed, Ministry of Commerce, Bangladesh.

Somaya Al Safty, Egyptian Organization for Standards and Quality- EOS.

Ferdaus Ara Begum, Dhaka Chamber of Commerce and Industry, Bangladesh.

Ahmed Bayhaqi, APEC Secretariat.

Amitava Chakraborty, Ministry of Commerce, Bangladesh.

Hany El Dessouki, Egyptian Accreditation Council- EGAC.

Nadia El Sabbagh, Ministry of International Cooperation, Egypt.

Manal El Samadony, Economist, Trade Related Assistance, USAID.

Amany El Wassal, Ministry of Industry and Trade, Egypt.

Isagani Creencia Erna, ASEAN Secretariat.

Iqramul Haque, Bangladesh Standards and Testing Institution, Bangladesh.

Syed Humayun Kabir, South Asian Regional Standards Organisation (SARSO), Bangladesh.

Maryam Mbacke, Ministry of Industry, Senegal.

Abdoulaye Ndiaye, Ministry of Agriculture, Senegal.

Nashwa Rashwan, Ministry of Trade and Industry, Egypt.

Mamadou Sangarre, Association Sénégalaise de Normalisation, Senegal.

Barama Sarr, Association Sénégalaise de Normalisation, Senegal.

Ashraf Seif, Egyptian Accreditation Council- EGAC.

Ahmed Sultan, Egyptian Organization for Standards and Quality- EOS.