STANDARDS, CONFORMITY ASSESSMENT AND THE AGENDA OF SOUTH
Abstract
The jeopardy of standards and technical regulations acting as non-tariff barriers (NTB) to trade, particularly through duplicative conformity assessment testing procedures, is an increasing one. Developing countries should pay due attention as it may restrain trade growth considerably as well as impact economic efficiency.

Among developing countries, there appears to be a growing awareness of the possible deprivation of trade posed by differing national standards and technical regulations. This awareness, however, associates an equal lack of knowledge and comprehension of the impact of standards that may have on trade and economic development. In terms of standards development, the first priority of developing countries should be the adoption of international standards, as they exist, along with the international standardizing Guides of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). Both would facilitate the integration of their manufactured exports into world markets and would reduce the costs of required conformity assessment procedures.

On a national level, most developing countries lack adequate infrastructure and human capital for the functioning and maintenance of adequate laboratory testing facilities. The level of sophistication and awareness with respect to standards development is very low in most developing countries and it may take several years and considerable investment to improve this situation. On an international level, while many developing countries are members of the International Organization for Standardization and the International Electrotechnical Commission, but do not participate actively in their working committees nor in the elaboration of internationally agreed standards. The same is true of the World Trade Organization (WTO) and the Agreement on Technical Barriers to Trade. The endorsement of Uruguay Round and entry into force of the WTO in January 1995 has not brought with its implementation the obligations and disciplines contained in this Agreement by the large majority of developing members.

For developing countries, it would be desirable to act more forcefully in a number of areas:

Firstly, in the area of adoption of standards: A more active and concerted participation in the committee work of the international standardizing bodies would ensure that new international standards closely reflect developing country needs and would reduce the predominantly European influence found in the new standards.

Secondly, for the adoption of national standards: Where no international standard exists, there is little economic rationale for developing countries to invest in the elaboration of their own standards. These standards should consequently in most cases be taken from their major trading partners to promote trade flows and international technology transfer.

Thirdly, with respect to existing multilateral disciplines: For standards and conformity assessment, developing countries should strive for a more effective implementation of the disciplines and obligations contained in the WTO Agreement on Technical Barriers to Trade.
This would enhance transparency and assist domestic producers and exporters in commercializing their products in foreign markets.

Fourthly, establishing a national inquiry point: It would oblige government officials in developing countries to put into practice a system of national standards information which should benefit local producers and exporters as much as foreign buyers. Collection and dissemination of this information would also oblige governments to be more aware of the choices that they are making and imposing on their private sector with respect to standards development.

This paper examines in detail the probable agenda of developing countries to find ways out for the technical barriers to their trade especially in standardization perspective.

**Introduction**

The promulgation of standards and conformity assessment and the impact of their adoption and use that may have on economic development and trade flows has not been a major concern of policy makers in developing countries. This is due to the fact that more traditional forms of market imperfections and trade barriers have played a predominant role in these economies. Industrial policy has been concentrated on the provision of differential taxes and subsidies to chosen sectors of industry rather than focusing on the impact of harmonizing and/or making compatible differing product standards. Relatively little attention has been given, until very recently, to the establishment of credible and modern infrastructure for laboratory testing and calibration facilities, or to the development of certification methods and accreditation bodies or the provision of systems of quality management control.

The question of what role standards and technical regulations may play in promoting economic development in developing countries or in facilitating their participation in international markets has not yet been examined. This could be due to the lack of interest on the part of policy-makers and partly due to the difficulties in identifying the technical barriers to trade created by incompatible national standards.

This paper addresses the problem of standards and technical regulations in developing countries and the policy options, which could facilitate economic development and do not act as technical barriers to trade.

**Economic Development and Trade in perspective of standards**

Standards are universal. There are literally thousands of standards in existence that affect all aspects of daily activity by consumers and producers in all countries and which have an impact on the processes, products and services which make up a nation’s gross domestic product. Standardization is a key element in promoting industrial and economic development and trade, and covers nearly the entire spectrum of the economy. In terms of international commerce, standards and conformity assessment can facilitate trade or frustrate its expansion. However, the potential to use standards as hidden trade barriers is immense. And it is unfortunately very difficult to determine whether standards are being implemented to achieve the legitimate interests of protecting the public from unsafe or sub-standard products in ways that also minimize any adverse effects on trade flows. This is underscored by the
lack of objective information and quantitative estimates of the impact of technical barriers on trade flows and on consumer welfare. This section examines the role of standards in economic development.

Economic Development and role of standards:
Standards play an important role in many aspects for the development of an economy. Table 1, shows the various ways in which standards contribute to enhanced welfare for both consumers and producers. Standards serve to communicate information to consumers in a consistent and reliable manner, which lowers the transaction costs for both buyer and seller. Standards permit the comparison of products on a common basis. Standards enhance competition in any given marketplace through allowing products that conform to a given standard to compete directly with each other. Standards allow for the interfacing of products and the ability of the consumer to mix and match components of a given system, which is especially important in industries that are organized into networks.

Table 1
ROLE OF STANDARDS IN ECONOMIC DEVELOPMENT

<table>
<thead>
<tr>
<th>For Consumers</th>
<th>For Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Standards transmit information in a</td>
<td>1. Standards allow economies of scale in</td>
</tr>
<tr>
<td>consistent and predictable format.</td>
<td>output.</td>
</tr>
<tr>
<td>2. Standards permit the comparison of</td>
<td>2. Standards enable parts and components</td>
</tr>
<tr>
<td>products and/or services on a common</td>
<td>to be combined efficiently in production.</td>
</tr>
<tr>
<td>basis.</td>
<td></td>
</tr>
<tr>
<td>3. Standards allow the mixing and</td>
<td>3. Standards diffuse technology embodied</td>
</tr>
<tr>
<td>matching of products.</td>
<td>in products and processes.</td>
</tr>
<tr>
<td>4. Standards ensure environmental</td>
<td>4. Standards provide a reference tool for</td>
</tr>
<tr>
<td>cleanliness and product safety.</td>
<td>organizing the production process.</td>
</tr>
<tr>
<td>5. Standards enhance the quality of life.</td>
<td></td>
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</tbody>
</table>

Standards are an important means of promoting the protection of health, safety and the environment as they ensure for the general public that certain levels of cleanliness in air and water quality as well as food safety will be maintained. Standards help to ensure product quality, as compliance to given standards in the manufacturing process (for example, according to those in the ISO 9000 system which set out standards for quality management) allows for procedures which ensure resulting product quality. For consumers and producers alike, standards help to enhance the quality of life.

One area of standards which has been extensively addressed in the literature is that of market failure due to externalities and the necessity for government regulation of product safety, quality, and labeling. There is basic agreement on the need for this type of intervention due to the public good nature of standards, and the argument for a strong government role in this area holds equally true for developing as for developed economies.
However, in other product areas where health and safety concerns are not predominant, it is questionable as to how much government intervention is appropriate in the selection and development of standards for use in the marketplace. Should governments in developing countries ensure product compatibility and oversee aspects of product quality for manufactured and agricultural products in general, when these standards of more of a private than a public good nature? There is no single answer to this question and a great deal of variation exists at present across countries in the areas involving the development of product and process standards that have been left to the market and those that have been subject to regulation.

**Developing Countries and Standards Development**

No literature has undergone to the author’s study yet that specifically focuses upon the link between adoption of standards, their impact on economic development and the policy options facing developing countries in this area.

Likewise, only very little information exists on the actual state of standards development in developing countries and of their activities with respect to standards and conformity assessment, both at the national and the regional level. The issue of standards has remained basically a focus of industrialized countries. This section attempts to partially fill this gap through examining the present state of standards development in certain major developing countries and regions. The status and functions of national standards bodies are examined, for those countries where information is available, and the scope of conformity assessment activities and accreditation is reviewed when this exists. Finally, the participation of developing countries in regional standardizing bodies is considered.

Most of the information reviewed below has been drawn from two surveys carried out in the Asia Pacific Economic Cooperation (APEC) Subcommittee on Standards and Conformance and the Free Trade Area of the Americas (FTAA) Working Group on Standards and Technical Barriers to Trade. These two surveys have put together comparative information on standards, technical regulations and conformity assessment activities in the economies of the respective regions. However, these surveys are only a first approach to this broad and complex question, and they are also incomplete due to the varying nature and coverage of the responses to the respective questionnaires. A total of 10 developing economies responded to the APEC questionnaire, while 30 responded to the FTAA Working Group questionnaire, but not all countries completed all questions. Nor do the two surveys contain identical information. This marks the need for additional research and data gathering which would investigate the nature and functioning of the standards systems in developing countries within a comparable framework of analysis.

**A. National Standardizing Bodies in Developing Countries**

Developing countries are as diverse in the processes through which they create standards as are other countries throughout the world. In fact, as there is no single process worldwide for creating and adopting standards, this is very much at the
discretion of the individual country as to the type of system it chooses to follow. There exists great variety among standards, even within the same product group, in such characteristics as purpose, scope, specificity of requirements and relative technological sophistication, all of which are determined by the type of standards-setting system in place. Many different types of organization influence the development of standards, but their relative weight in this process varies from country to country. The variables that affect the pattern of standards development in a sector include: (i) industry size and concentration; (ii) dominance of specific suppliers or buyers; (iii) level and speed of technological advance; and (iv) public interests such as safety, health, and environmental protection.

Developing countries have been confronted with quite different types of standardizing systems to use as models. The North American model for standards development is a very decentralized, market-oriented one with an incredibly large number of private-sector, standards developing organizations, in addition to the numerous regulatory agencies of the U.S. Government. There are over 750 organizations in the United States that develop and implement national standards, and the number of private-sector, voluntary consensus standards elaborated by technical and professional societies, industry associations and standards-developing membership organizations, reaches nearly as many as the number of federal procurement and regulator standards which have been developed by the U.S. Government. In Canada the private sector is also very active in the development of standards, though the central government still plays a strong role. The Standards Council of Canada (SCC) is a Crown corporation, with a joint private-public statute. In Western Europe, however, standards-developing activity has traditionally been much more centralized within most member states of the European Union (the Netherlands being an exception), and continues to be so on a community-wide level under the European Commission. The latter body is charged with the objective of harmonizing standards of European Union members when possible, or with setting out the “essential requirements” that products must meet to ensure adequate health, safety, environmental and consumer protection.

Information on national standardizing bodies in developing countries is limited. The International Organization for Standardization (ISO) publishes a Directory of ISO Member Bodies but this has not been updated since 1991. This Directory lists 45 national standardizing bodies for developing countries in Asia and the Western Hemisphere.

The number of national standards, which have been developed in various developing countries, differs widely, ranging from 600 in Singapore and around 1,000 in Uruguay and the Philippines to around 8,000 in Argentina, Brazil and Turkey. These are modest numbers however compared with the nearly 100,000 standards having been developed in the United States. Also interesting is the relatively small proportion of standards in Latin America which are mandatory (i.e., technical regulations). For the larger countries of South America, these represent less than 30 percent (Argentina, Brazil, Columbia,
Mexico, Peru and Venezuela), which can be compared to roughly 50 percent for the United States and Western Europe.

Consequently, not only are there absolutely fewer standards overall in developing countries, but there are also many fewer mandatory standards with which industry is obliged to comply. This situation most likely reflects a number of factors, including a less active role on the part of national standardizing bodies, a relatively less developed and diversified manufacturing sector, and the lack of a perceived need by industry to develop additional standards at the present time.

The size of the staff employed in national standardizing bodies varies widely also, from around 30 persons in Chile and Indonesia to over 1000 in Turkey and India. Government funding for standardizing bodies covers 100 percent of the activities of these bodies in China, Korea, Indonesia, Mexico, the Philippines and Thailand, but less than 1 percent in Turkey, 12 percent in India and 16 percent in Brazil. For those countries where the government contribution is of lesser importance, standardizing bodies draw their funding primarily from the testing and certification activities that they perform for private firms. However, some standardizing bodies also earn income from the sale of publications.

There appears to be no generalization that can be drawn about importance, funding structure, or staff size of standardizing bodies in developing countries, either by region or by relative level of economic development. In national measurement and metrology services there appears to be a greater similarity of activity and structure across developing countries. In Asia, as in Central and Latin America, all countries administer a single facility run by government that maintains physical standards and their traceability through calibration laboratories.

B. Certification and Accreditation Activities in Developing Countries

A great deal of diversity is also evident in the current state of development in national certification and laboratory accreditation capabilities. On the basis of information available only for developing countries in the Western Hemisphere, it seems that while a few countries have established national accreditation programs for laboratories that perform product testing, most have not. The number of countries which have either certification and/or accreditation systems in place in Latin America and the Caribbean totals only seven (Argentina, Brazil, Chile, Colombia, Costa Rica, Peru, and Venezuela).

No developing country in either Central America or the Caribbean outside of Costa Rica has a national system for certification and accreditation at the present time. Most countries have indeed only recently put this into operation. Colombia created its National System for Standardization, Certification and Metrology in 1994, and Argentina created a National Accreditation Agency in 1995 which has not yet begun to fully function, both for the purpose of accrediting certification organizations and building a network of testing laboratories. Ecuador is working at present to put in a national system of accredited laboratories, and Bolivia is also in the process of drafting legislation to create the Bolivian System for Standardization, Metrology, Accreditation and
Certification in order to accredit inspection and certification offices, testing and calibration laboratories. In Central America and the Caribbean, Panama and Trinidad and Tobago are in the process of establishing national systems of accreditation.

The lack of capacity at present in many developing countries to carry out the functions of certification and accreditation of laboratory is a very revealing fact with serious implications for the objective of trade liberalization and facilitation in the area of standards. Without a system of certification and accreditation for testing facilities, it is impossible for developing countries to move towards reciprocity in testing results through the elaboration of bilateral or multilateral mutual recognition agreements. This is reflected in the very small number of agreements that have been signed between countries to accept the tests performed by other national testing laboratories, in either Asia or the Western Hemisphere.

Almost all of the Latin American countries with national accreditation systems in place allow for the accreditation and certification of both public and private testing agencies. All make reference to the use of ISO/IEC Guides relevant to conformity assessment and related activities for the way in which certification and accreditation systems are structured. Some countries in Latin America also reference the accreditation system model put in place by the European Union (EN 45000) in the development of their national systems. The structure of product certification and laboratory accreditation activities, when they exist also appears to be very different as between countries. In several countries the government alone exercises control over laboratories that test and certify products while in a few countries this function is shared with private organizations.

The extent to which developing countries accept the test results of other countries is also indicative of the state of development of their standards framework and their degree of integration with other markets. The extent of this acceptance at present is limited at best.

It can be seen that the Asian developing countries who replied to the survey questionnaire indicated to a large extent their acceptance of both standards used in other and the certification issued in other countries. However, a note of caution must be sounded, as there are often qualifications attached to such acceptance which mean that in practice such certification is actually not allowed on face value but needs to pass a further layer of requirements. For example, in the chemical sector Korea accepts certifications issued in other countries, but only in cases in which certifications meet “local requirements”, specified by the government. In the food sector Korea accepts other certifications only through negotiated bilateral arrangements. A similar situation prevails in Thailand where chemical certifications are accepted only where bilateral agreements have been negotiated. In China, certifications from abroad are only acceptable on a case-by-case basis by the State Administration of Import/Export Commodity Inspection. For these three countries, the acceptance of foreign certifications of product quality and conformance to a given standard is actually very limited in practice due to these additional requirements. Thus there remains great
diversity not only between countries in terms of conditions for acceptance of foreign certification within national administrative structures, but also between countries in terms of actual practice.

On the whole, it can be stated that the extent of integration of developing countries in Central and Latin America with each other’s markets through coordination of standards activities and cooperative agreements is extremely limited at the present time. Further research would be needed to determine the situation in Asia in this respect.

C. Regional Standardizing Activity by Developing Countries
Developing countries are members of certain regional standardizing bodies, a few of which have been in existence for some years. Six regional standardizing bodies exist in Asia, an equal number in the Western Hemisphere, and one in Africa. These various bodies have been working towards the elaboration of common policies covering non-regulated goods or for voluntary product standards, as these types of policies are easier to elaborate than are common policies for technical standards in the regulated areas. The majority of bodies (mentioned below) involved in standards-related activities are fairly recent in date, having been established since 1992. This push has partially resulted from the creation of the regional integration groupings, APEC and the FTAA, and partially from private-sector efforts to promote reform. Taken together, this has given a greater dynamism to the standardizing process.

The regional standardizing bodies that exist for developing countries are the following:
- **Africa**: African Regional Organization for Standardization;
- **Asia**: Pacific Area Standards Congress (PASC); Asia-Pacific Laboratory Accreditation Cooperation (APLAC); Asia-Pacific Metrology Programme (APMP); Pacific Accreditation Cooperation (PAC); Asia-Pacific Legal Metrology Forum (APLMF); and with more restrictive membership, the ASEAN Consultative Committee for Standardization and Quality (ACCSQ);
- **Western Hemisphere**: Comision Panamericana de Normas Tecnicas (COPANT); Sistema Inter-americana de Metrologia (SIM); Inter-American Accreditation Cooperation (IAAC); and Organizacion LatinoAmericana para la Calidad (OLAC).

Several subregional standardizing councils also exist under various trade and integration arrangements, for example, under the Andean Group, Mercosur, the Group of Three and the Caribbean Common Market.

Of the above, two of the recently established bodies are notable for their attempt to facilitate the acceptance of testing results throughout the region. APLAC attempts to do this through mutual recognition of laboratory accreditation bodies, while the PAC is an association of accreditation bodies that promotes global acceptance of certificates of conformity. The PASC is also working towards developing mutual recognition in the non-regulated sectors and is re-evaluating its structure, priorities and operations in order to launch new programs. The IAAC was also recently established in the Western Hemisphere to carry out a function similar to that of the APLAC through promoting the mutual recognition of laboratory accreditation bodies. It held its second meeting in Brazil.
where members agreed upon a set of objectives and actions, to be coordinated with the ongoing work of COPANT in the area of standards and conformity assessment.

The earlier organizations were not able to come to any concrete results in terms of fostering mutual recognition between their member standardizing bodies and/or councils. The more recent organizations have likewise not yet been able to foster concrete results in this area, although they have made some progress in reducing duplication of certain requirements for laboratory accreditation. Importantly, they have begun to coordinate the activities of their members in an area, which was not addressed previously. As such, they hold promise to further government efforts towards trade facilitation through promoting mutual recognition of conformity assessment activities in non-regulated sectors.

**Multilateral Disciplines on Standards and Developing Countries**

Standards and technical regulations were the object of one of the non-tariff codes which arose from the Tokyo Round of Multilateral Trade Negotiations (1979) and have thus been under certain multilateral disciplines for many years. However, the Standards Code had many shortcomings, the main one of which was its lack of membership. Adherence to the Standards Code was voluntary, and at the end of 1993 there were only 46 signatories to the Code, most of them industrialized countries. The increasing importance of standards and conformity assessment in international trade placed this as one of the negotiating groups of the Uruguay Round of Multilateral Trade Negotiations. In fact, the negotiations (and subsequent agreements) were divided into two parts, which are closely related:

(i) measures related to standards and technical barriers to trade (addressed in the WTO Agreement on Technical Barriers to Trade) and

(ii) measures related to standards on animal, plant material, and human health (addressed in the WTO Agreement on the Application of Sanitary and Phytosanitary Measures).

Although the issues are similar in the two Agreements, as are the standards-related trade barriers, which arise, only the first agreement will be discussed in this study.

The Uruguay Round resulted in a new set of disciplines on technical barriers to trade, which go much further than did those under the previous Tokyo Round Standards Code. At present the membership of the World Trade Organization stands at more than 140 countries. This means that adherence to the WTO Agreement on Technical Barriers to Trade now has nearly three times as many members as before, of which nearly 60 percent (or around 80 members) are developing countries. This represents a considerable increase as well in the volume of trade covered by the new disciplines.

**A. WTO Agreement on Technical Barriers to Trade**

Standards and conformity assessment as technical barriers to trade are essentially problems of economic regulation. As such, they are far less clear-cut than, for example, tariffs and quotas, and their “liberalization” is necessarily of a different nature. It is practically impossible to apply the GATT tradition of liberalization through reciprocal
concessions to the area of standards and technical regulations. This was not attempted in either the Tokyo Round or the Uruguay Round of Multilateral Trade Negotiations. Instead, a framework for economic regulation through agreed principles and derived rules was established and backed up by institutional mechanisms to give them credibility and resolve conflicts.

The new WTO TBT Agreement retains the original Standards Code obligations but refines or adds to them in several important respects. The new Agreement reiterates the principles of application of both most-favoured nation treatment and national treatment and the prohibition of the “sham” principle (or the attempt to use standards to discriminate against foreign suppliers). The WTO Agreement includes the following:

i) application of disciplines on standards to both process and production methods as well as to manufactured products (Annex I, Definitions);

ii) extension of the rules to non-governmental or private standards organizations, and requiring the central government to be responsible for good faith implementation of the agreement and application of its principles at any level of government or by any private-sector body involved in the standards system (Article 3);

iii) extension of the obligations of national treatment and non-discrimination to all forms of conformity assessment, including laboratory testing, accreditation, recognition, and quality system registration programs (Articles 5 through 9);

iv) inclusion of a “Code of Good Practice for the Preparation, Adoption and Application of Standards” which outlines for the first time general principles for development and application of standards by non-governmental organizations (Article 4 and Annex 3);

v) the obligation for governments to ensure that technical regulations will not be more trade-restrictive than necessary to fulfil a legitimate objective, along with the requirement that these are not “prepared, adopted or applied with a view to creating unnecessary obstacles to international trade” (Article 2);

vi) the commitment (non-binding) of national governments to harmonize national standards with international ones (Article 2);

vii) the admonition for reciprocity in conformity assessment procedures through requiring governments to accept the results of such testing procedures from third countries, provided that they are satisfied with their equivalency (Article 6);

vii) provision of a binding framework for the settlement of disputes arising from differing technical regulations under the WTO Integrated Dispute Settlement Procedures so that noncompliance with provisions of the TBT Agreement found by a panel will require modification of the practice in question, failing which retaliatory tariffs can be imposed (Article 14).

Three of the above are particularly important for the objective of trade facilitation. These are the commitments for governments to attempt to harmonize national standards with international ones, the exhortation to apply reciprocity in the area of conformity assessment procedures and the inclusion of a Code of Good Practice. However, none of these may prove to be very effective in influencing practices by governments or national standardizing bodies. This is because the language used for harmonization of standards is vague and nonbinding. Moreover, Article 2.4 contains a form of “escape
clause” which states that international standards are not required to be used as the basis of technical regulations when they would be “an ineffective or inappropriate means for the fulfillment of the legitimate objectives pursued”. However, what is considered ineffective or inappropriate is not defined in the Agreement. There is no admonition in the Agreement to harmonize any standards other than international ones.

With respect to reciprocity in the area of conformity assessment procedures and acceptance of test results from other members, the WTO Agreement appears to be moderately supportive but certainly not proactive. Article 6.3 “encourages” members to be “willing to enter into negotiations for the conclusion of agreements for the mutual recognition of results of each other’s conformity assessment procedures”. But they are only required to accept these if they are satisfied that those procedures “offer an assurance of conformity equivalent to their own procedures” (Article 6.1). In actual practice this issue has not figured among those discussed so far by WTO Members. The TBT Committee has been established to oversee implementation of the Agreement (Article 13). Although the Committee met seven times during its first two years of existence (1995 and 1996), the question of elaborating mutual recognition agreements was not addressed.

Lastly, although the Code of Good Practice represents a considerable step forward through extending for the first time a common mode of operation for private standards bodies consistent with the disciplines of the multilateral trading system, the Code remains voluntary and lacks an enforcement mechanism. Compliance with the disciplines and procedures it sets out for private standardizing bodies is not an obligatory part of the TBT Agreement.

B. Treatment of Developing Countries under the WTO TBT Agreement

The WTO TBT Agreement contains one article on special and differential treatment of developing country members (Article 12). However, unlike several other agreements, the TBT Agreement makes no general allowance for a longer transition period for developing countries in terms of their compliance with the disciplines on standards and technical regulations, or the establishment of inquiry points and submission of all relevant notifications.

Article 12 allows for differential treatment of developing countries in three important ways: Developing members are not expected to use international standards as a basis for their standards and technical regulations, which are “not appropriate to their development, financial and trade needs” (Article 12.4). The justification for this provision is to allow developing members to preserve indigenous technology and production methods in line with their level of development. However, such an allotment is clearly not in the interest of developing countries, as the adoption of national standards, which are not internationally compatible, makes the eventual integration of such products into global markets more difficult. And it reduces the economic efficiency of production processes in developing countries, which remain segregated from those of the dominant and most technologically advanced firms. The Code of Good Practice outlines general
principles for development and applications of standards by non-governmental organizations. These principles include: national treatment of products from foreign suppliers; treatment no less favorable than that accorded to domestic products or imports; publication and dissemination of work in progress; institution of a 60-day comment period prior to adoption of standards; and refraining from applying standards that could serve as barriers to international trade.

In the case that a developing country member feels unable to fully comply with the obligations of the TBT Agreement, Article 12.8 provides for the possibility of a request for specified, time-limited exceptions in whole or part from these obligations. The TBT Committee is authorized to grant such exceptions after consideration, according to the “special development and trade needs of the developing country Member, as well as its stage of technological development”. To date the TBT Committee has received no such requests, which means that developing countries should already be complying with the obligations and disciplines of the TBT Agreement. The section below evaluates compliance to present with these obligations. Lastly, Article 12.7 provides for technical assistance to be given to developing countries for the preparation and application of technical regulations, standards and conformity assessment procedures.

C. Implementation of WTO TBT Agreement by Developing Countries

The WTO TBT Agreement contains some very specific requirements with respect to implementation. Some of these are one-time obligations such as the necessity to establish an inquiry point and to notify national implementing legislation for the new Agreement. However, other obligations are ongoing ones, particularly with respect to notification. Such requirements are pervasive throughout the Agreement and include an obligation to notify the following:

i) all new technical regulations by central and local government bodies, when these may have a “significant effect on trade of other members” (Articles 2.9.1; 2.10.1; and 3.2);
ii) all conformity assessment procedures by central and local government bodies when these may have a “significant effect on trade of other Members” (Articles 5.6; 5.7; and 7.2);
iii) agreements with any other country or countries on standards, technical regulations or conformity assessment procedures “which may have a significant effect on trade” (Article 10.7);
iv) measures taken to ensure the implementation and administration of the Agreement (Article 15.2);
v) acceptance or withdrawal from the Code of Good Practice (Annex 3.C);
vi) notification of the work programmes of the standardizing bodies who have accepted the Code of Good Practice, to be made every six months, as well as information on the standards under preparation and those which have recently been adopted (Annex 3.J).

As stated earlier, the new WTO TBT Agreement is universal in its membership. More than 80 developing countries are now members of the Agreement by virtue of their endorsement, all of which are thus required to carry out the requirements of the Agreement listed above. In practice, however, compliance by developing country
members with the obligations and requirements of the TBT Agreement has been lax at best.
The obligation to establish an inquiry point is set out in Article 10 under information and assistance. Such inquiry points are to provide answers to inquiries from other Members and to distribute relevant documents concerning standards, technical regulations and conformity assessment procedures, in existence or proposed, by central or local government bodies. One single body is to be designated in each member country as responsible for the notification requirements under the Agreement, except those in Annex 3 on the Code of Good Practice. As of end 1996 only 42 of the more than 90 developing members had established inquiry points. And during the first seven months of 1996, only 9 developing countries submitted notifications of new or changed technical regulations (four countries in the Western Hemisphere and five in Asia), as compared with 18 developed country members. The notifications by developing members numbered 46 out of a total of 233, or less than 20 percent.

Few developing countries have submitted obligatory statements of implementation of the TBT Agreement: this is the case for only 17 members (six countries in the Western Hemisphere and seven in Asia), indicating a remarkable laxity in compliance with one of the most basic obligations of the Agreement. Lastly, in terms of the Code of Good Practice, which is a non-binding commitment, standardizing bodies from 21 developing countries indicated acceptance of this Code as of December 1996, out of a total of 60 acceptances (of which nine countries in the Western Hemisphere and six countries in Asia). Once again, this is a very limited number of countries, indicating that standards bodies in other developing countries are either not aware of this Code of Good Practice, or do not wish to be bound by its provisions in the elaboration of national standards.

International Standardizing Bodies and Developing Countries
Some 28 international bodies are involved in standards setting on a global level, with the participation of hundreds of organizations from around the world, the majority of them however from developed countries. Of these organizations, three account for 85 percent of all international standards, issuing between them nearly 1,000 new or revised standards each year. The oldest of the three is the International Electrotechnical Commission (IEC), founded in 1908 to prepare standards in the electrotechnology field. The main organization is the International Organization for Standardization (ISO), founded in 1946, and which prepares standards in all other fields except electrical and electrotechnical standards and telecommunications. The scope of activity of the ISO is unlimited, and in principle, it may undertake standardization initiatives relating to any product or service market. However, in several specialized fields the ISO defers to other organizations such as the International Telecommunications Union (ITU) that covers international telecommunication standardization and the Codex Alimentarius Commission, founded in 1962 to develop standards for food safety and labeling issues.

Though a part of the community of international organizations, the ISO and IEC are different in terms of status, as they are private, non-governmental organizations. Each member country designates its own representative, and the 114 ISO members are
composed of the main national standards bodies from each country which may be either government agencies or private sector standards entities. Similarly, the IEC has a membership of around 50 national committees representing both private and public sector interests. In contrast, the ITU is a treaty organization under the United Nations, whose membership is made up of government representatives only and not industry.

Development of standards by all three main standardizing bodies is a lengthy process, which operates through the active and voluntary participation of members with “consensus” required to obtain results. The actual way in which standards are elaborated in the three is similar in its major elements. The ISO, IEC, and the ITU all have administrative structures with committees, subcommittees, and working groups which are formed when a sufficient number of members express interest in considering the possibility of developing standards in a particular area. All three rely on consensus as the ultimate form of decision; if the working group comes to an agreement, it will make a proposal for a standard and the member nations will then vote on whether to accept this proposal as a new, international “standard”. A recommendation becomes a standard after 75 percent of the ISO members accept it. These standards remain “voluntary”, that is member nations are not obligated to adopt them in their national markets; however their approval suggests that broad-based compliance should follow. In all three organizations participation in the standardizing process is voluntary at all levels but once a nation becomes a member, it is expected to participate actively.

In term of scope and impact, the ISO has developed to present around 9,800 voluntary standards. Though this is a large number, it is fairly insignificant compared with the many thousands of standards in effect in the markets of developed countries. However, the ISO work in the area of elaborating a quality system standards series has received substantial attention over the past decade. This consists of a series of international standards for quality management systems (ISO 9000, 9001, and 9004) which were published in 1987 and revised in 1994 and then in 2000. The ISO has also extended its reach to the area of environmental management in the form of the ISO 14000 series.

Both the ISO and the IEC have formal links with the World Trade Organization through the Committee on Technical Barriers to Trade. Both ISO and IEC representatives have spoken at meetings of the TBT Committee on relevant aspects of international standardizing work. The TBT Agreement specifically encourages members to participate in the setting of international standards (Article 2.6). The Code of Good Practice for the Preparation, Adoption and Application of Standards makes several references to ISO/IEC work, and standardizing bodies are required to notify the acceptance of the Code as well as the work programme of national standards bodies to the ISO/IEC Information Centre (ISONET). The ISONET (information network on standards activities) is maintained by the ISO/IEC) rather than by the WTO Secretariat. The objectives of the ISONET are to coordinate and channel the flow of information on standards, technical regulations and standards-related documents both internationally and nationally, by linking the information centres of the ISONET members into a coherent information system. There are presently 72 national members of ISONET.
A. Participation by Developing Countries in ISO Work

Out of its total membership at present, the ISO lists 52 members, or nearly half, from developing countries. Although the ISO has several policy development committees, including one devoted exclusively to developing countries and another devoted to conformity assessment, the bulk of the work in ISO/IEC takes place in working groups and technical committees. ISO has more than 180 active technical committees, some 630 subcommittees, and around 2,000 working groups that are led by 821 secretariats from 35 member countries that act as secretaries or leaders of the technical committees. Each technical committee consists of participating members, observer members, liaison organizations, and delegations of suppliers, user representatives and government. Over 200 technical committees of similar structure conduct the IEC’s work.

The participation of developing countries in the work of these organizations has not been very strong in the past. The list of developing countries which hold secretariats or which are responsible for leading the work on standards development within the ISO working structure is very limited. Only ten developing countries chair a secretariat of some sort within the ISO. Of the total 184 secretariats of ISO technical committees, only 10, or 5.4 percent are held by developing countries. Of the 591 secretariats of technical sub-committees, only 19, or 3.2 percent are held by developing countries. Of the 1,944 secretariats of working groups, only 29, or 1.5 percent are held by developing countries. Overall, developing country member bodies hold only 2.8 percent of the secretariats of working bodies (i.e. technical committees, sub-committees or working groups) within the ISO. Those developing countries with the relatively larger participation in ISO work are China and India. The only developing country in the entire Western Hemisphere to hold an ISO working group secretariat is Brazil.

This situation carries with it several implications for the development of international standards. The very limited participation of developing countries in the ISO/IEC standardizing process means that most international standards have been skewed towards developed country requirements, and most of this European. European members have dominated the international standardization process. At present, European members hold two-thirds of the ISO secretariats, which means that the adoption rate of ISO and IEC standards has been much higher in Europe. This European influence makes the process of attempting to align national standards with international standards more problematic for developing countries, as will be seen in section VIII. It also slows down the growth of trade through making the penetration of firms from developing countries into European and U.S. markets more difficult, to the degree that national standards differ and developing-country objectives are not taken up in international standardizing fora.

B. Adoption of ISO Standards and Guides by Developing Countries

Another of the major contributions made by the two international standardizing bodies has been the elaboration of internationally agreed Guides to serve as the basis for the work and activities of standards bodies and conformity assessment procedures. To date
a total of nearly 70 different Guides have been elaborated for activities as diverse as: the establishment of national standards bodies; practices for the testing, inspection and certification of products, processes and services; guidelines for acceptance of certification and accreditation bodies; guidelines for laboratory proficiency testing; guidelines for a third-party assessment and registration of a product quality system; guidelines for the presentation of inspection results; requirements for the competence of calibration and testing laboratories; requirements for the acceptance of inspection bodies; requirements for assessment and accreditation of certification/registration bodies; requirements for bodies operating product certification systems; and many others. It is difficult to know the extent to which these international Guides are used as references for national practices in developing countries, as no such information exists.

More concrete information is available on the adoption of the ISO 9000 series for quality management. This series was developed in the mid-1980s in order to bring about greater coherence and similarity in production techniques and thus product quality for both industrial output and service sector activity and thus enhance compatibility between trading partners. The ISO 9004 models present guidelines on quality management, in providing firms with a set of definitions as to what constitutes quality and how to set up a system of quality control in production. The ISO 9001 model is applicable to external quality management purposes and is applicable to contracts between supplier and client for the design/development, production, installation and servicing of products as well as for final inspection and testing.

The ISO 9000 standards have been adopted by firms in over 70 countries to present, and more than 95,000 certificates had been issued for ISO 9000 worldwide as of mid-1995. However, most of the firms having subscribed to the ISO 9000 series are from developed economies. The participation of firms from developing countries is still very modest. Of the world total ISO 9000 certifications, the United Kingdom represented nearly half of these (47 percent), while other European countries held 29 percent of total certifications, and North American firms 8 percent. Developing countries in Asia and the Western Hemisphere accounted for only 8 percent of total certifications.

In Asia, a total of 6,513 firms have certified with the ISO 9000 standard. However, firms from Singapore, Taiwan, Hong Kong and South Korea account for nearly two-thirds of this total. Certification by firms from other countries (with the exception of India, Malaysia and more recently China) has not yet been widespread. One explanation given for this is that companies in the newly industrializing or emerging Asian economies were pioneers in operating quality management systems (following the Japanese model) that function somewhat differently from the ISO 9000 standard. This fact, combined with already high levels of international competitiveness has resulted in the relatively low number of companies that have implemented quality systems compatible with the ISO 9000 standard. Nevertheless, growth in ISO 9000 certifications in developing Asia has been very rapid in mid nineties, with the number of certified firms increasing by nine-fold during this two and a half-year period. In most of the countries in
developing Asia the major drive for implementing the ISO 9000 standards has been to facilitate exports, especially to the European Union.

In the Western Hemisphere, there are far fewer firms, which have certified with the ISO 9000 standard. This total stood at 1,433 at end 1995, with firms from just two countries – Brazil and Mexico - making up 80 percent of this total. Of the other countries that show firms with ISO 9000 certification, these numbers are very small (less than 10 firms for Costa Rica, Dominican Republic, El Salvador, Jamaica, Peru, Trinidad and Tobago and Uruguay). In general, ISO and other programs for accreditation, certification and assessment are very recent in Central and South America and have to date made little headway in these areas.

Expected benefits for developing firms from adhering to an ISO 9000-quality management system are enlarged markets made possible by increased competitiveness due to a lowering of internal costs through increased efficiency and quality of the firm’s operations as well as guarantees to consumers worldwide of a certain product quality. However, these benefits have been questioned by some due to the relatively high costs of such certification and the way in which the ISO certification process is carried out in developing countries. In such countries national accreditation boards are often under direct government control and thus show a conflict of interest due to the lack of an international regime for recognition of ISO certificates.

Conclusions and Policy Options for Developing Countries
The sections above have discussed various issues in the area of standards and conformity assessment as they affect developing countries. They have also reviewed the participation of developing countries in regional standardizing activities, in the multilateral forum of the WTO, in the work of international standardizing bodies (ISO and IEC), and in various regional and sub-regional integration arrangements as concern standards activities. On the basis of this broad range of information, certain observations can be made with respect to the policy options facing developing countries in the area of standards and conformity assessment, in light of the dual objectives of enhanced economic development and trade expansion. Such observations are of a preliminary nature and would need to be further supported through further research, as this is an area which has basically been untouched in terms of consideration by economists or policy analysts.

A. Standards Development and Developing Countries
The poor state of standards development in most developing countries at present is a factor running through all policy considerations in this area. National policies on standards development have for the most part been neglected in favor of concentration on other trade and industrial policies. Also, the relatively small participation of many developing countries in international trade until recent years has meant that incompatible standards have not played a very important role in deterring exports, particularly as the export structure of many developing countries in Latin America, Africa and to a lesser extent Asia, has been largely concentrated on raw material and primary
commodity exports where standards do not play a large role. The present situation is therefore one where the infrastructure for laboratory testing facilities and calibration and the human capital resources are badly lacking as compared with those in industrialized economies. Also, most developing countries lack a coherent policy towards standards development and do not have in place a program of national certification or accreditation.

Practically no mutual recognition agreements for conformity assessment have been concluded by developing countries, and very few memoranda of understanding or cooperation agreements in the area of standards or calibration exist. This lack of reciprocal recognition of standards and conformity assessment procedures on the national level has been mirrored on the regional level, where regional standardizing bodies in Asia and Latin America have accomplished relatively little during the history of their operation, due in part to the lack of dynamism and interest on the part of their members.

In terms of developing a national standards policy, developing countries are faced with the policy option of elaborating their own indigenous product standards or adopting them from international sources or other national sources. The best choice from a cost and efficiency point of view would be for developing countries - who in any case will continue to be in the category of “standards takers” for quite some time - to adopt standards developed elsewhere, particularly for internationally traded products. Where possible, internationally harmonized standards elaborated by the ISO/IEC would be the best choice for developing countries as this would reduce the requirements for conformity assessment testing when selling these products on world markets.

In the absence of international standards, the choice of national standards, especially in the non-regulated or voluntary sector should be based on market criteria. That is, developing countries would do best to adopt those standards which are in effect in the markets of their main trading partners so as to be able to diffuse their exports with the least cost in terms of required conformity testing and the least friction in terms of compatibility. Presumably, if this choice were left up to the private sector, through the possibility for private firms to actively participate in national standardizing activities, this result would prevail. This suggests that policy officials in developing countries should carefully consider the extent of government participation in standards making when this does not involve regulated product sectors.

B. Multilateral vs. Regional Approach to Trade Facilitation in the Area of Standards and Conformity Assessment

Developing countries participate relatively little in multilateral and international work on standards. Although more than 100 developing countries are members of the World Trade Organization, but implementation of the disciplines and obligations of the TBT Agreement has been very slow and is still quite inadequate on the part of developing members. Transparency has not been achieved, as compliance with the requirement to establish national inquiry points for the dissemination of information on national
standards and technical regulations, as well as compliance with notification requirements on new and proposed standards and technical regulations, has still not been implemented by the majority of developing members.

Within the main international standardizing bodies of the ISO and IEC, developing country participation has been very low in the technical committees, sub-committees and working groups that carry forward the work of elaborating internationally harmonized standards. Adoption of ISO/IEC Guides is also at the early stages in many developing countries. The lack of participation of developing countries in these international for a diminishes their possibilities for achieving a greater understanding of the standards policies of other countries and for using the opportunity of WTO disciplines and ISO/IEC established Guidelines to rationalize and improve their own national standards policies.

An equally important question is the relative importance which officials in developing countries should give to regional integration efforts. The regional approach to standards and conformity assessment has been relatively more successful on the whole than has the multilateral approach of the WTO in obtaining results in two important standards-related areas. The first is in the movement towards harmonization and/or convergence of national standards and technical regulations. The second is in the work on development of mutual recognition or equivalency agreements, for the reduction of barriers to trade caused by duplicative and costly testing procedures for the purpose of conformity assessment. Both of these are major elements for achieving trade facilitation in the standards area, yet they are not being actively considered nor promoted under the WTO TBT Agreement, most likely due to the difficult of trying to achieve such ambitious objectives in an organization with such broad and diverse membership. These objectives are however under active consideration in all the major regional and sub-regional integration arrangements.

It may prove easier to bring about the convergence of policy objectives in the standards area, essential to the elaboration of mutual recognition agreements, among a smaller group of countries on the regional level. Many of which are at similar level of development, than it would be on the multilateral level. Thus it would seem to the benefit of developing countries to push hard for progress on trade facilitation at the regional level, at the same time that they increase their compliance with existing multilateral disciplines under the WTO, which also form the basis of regional integration efforts.

**Recommendations for Further Study**

A considerable amount remains to be done in the area of standards, conformity assessment and the agenda of south as so little information exists at present. However, much of the work which remains necessary is of a data-gathering nature so as to allow policy analysts to better understand the actual state of standards development and the nature of standards systems in developing countries. This leaves a similar exercise outstanding for developing countries in Africa, and South and Central Asia. Only when
the actual state of national standards systems is known can appropriate recommendations are made to improve their functioning.

Further study should be undertaken of the activities and approaches being elaborated towards standards and conformity assessment in the various sub-regional integration arrangements with developing-country participation. Information has been presented above for the Asia Pacific and the Western Hemisphere, but more detailed knowledge would permit an assessment of the compatibility of these regional integration approaches to standards with the obligations of the multilateral disciplines of the WTO TBT Agreement, as well as an analysis of the helpfulness of the recent initiatives undertaken by regional and sub-regional standardizing bodies, particularly in the broad areas of laboratory testing, certification and accreditation, to the trade facilitation process.

More research would also be useful on how best to further trade liberalization and facilitation for developing countries in the area of standards, particularly as regards the potential benefits and scope of elaborating mutual recognition agreements for the purpose of conformity assessment. The principle of “tested once, accepted everywhere” is an excellent one, but putting it into practice is dependent upon a number of factors which will determine whether it is possible to positively assess the equivalency of national standards, including the state of national infrastructure development and the degree of confidence in testing procedures, along with the basic agreement on essential policy objectives, among others. The process will most likely be a slow one, but it would be facilitated by more information allowing a better determination of what is needed in the present context for this principle to be translated into reality for developing countries, whether it be at the multilateral, bilateral or regional level.

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Mr. Muhammad Midhat Ali is the Managing Partner and Consultant at Quality Pakistan – an engineering and management consultancy firm. Mr. Ali has bachelors in mechanical engineering and masters in industrial and systems engineering from U.S.A. His entire working experience is in quality assurance and general management. Mr. Ali has another portfolio as Principal Consultant at Sustainable Development Counsel, which is dedicated for research and training assignments, related to trade and environment. This paper is part of a study, which he has proposed to undertake in association with a local business forum. Mr. Ali is known in quality management circle within the country for his publications, training programmes and consultancy assignments. This will be the fourth time that he is participating as a speaker in this convention.