

Mutual Recognition Agreement on Conformity Assessment

A Deliverable on Non-Tariff Measures for the EGA?

By Mahesh Sugathan

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International Centre for Trade and Sustainable Development

Issue Paper No. 21

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FOREWORD

Climate change is an unprecedented challenge facing humanity today. The COP 21 Paris Agreement that was concluded under the UNFCCC in December 2015 marks the first formal multilateral climate agreement in 18 years. Under the Agreement Parties express their intention to hold global average temperatures to well below a two degree Celsius rise from pre-industrial levels, while pursuing best efforts to limit these to 1.5 degrees Celsius. Countries will present increasingly ambitious "nationally determined contributions" (NDCs) every five years, outlining their mitigation pledges.

Given that fossil fuel-based energy use is the biggest contributor to anthropogenic greenhouse gas emissions, a rapid scale-up and deployment of renewable or sustainable energy sources will be a critical component in the pursuit of countries' NDCs. A switch to cleaner and low-carbon transport fuels and technologies as well as greater energy efficiency measures are also necessary to achieve a 1.5 to 2 degree Celsius goal.

A scale-up of sustainable energy will also contribute to enhancing access to energy for millions of people in the developing world and power rapid economic growth in emerging countries through increasingly sustainable means. This will enable them to move further away from carbon-intensive growth trajectories. It will also enhance energy security by reducing the reliance of countries on fossil-fuel imports.

Scaling up the expansion of renewable energy and improving energy-efficiency will entail addressing impediments to the global diffusion of clean energy and energy-efficient goods and services. Trade policy can contribute in this regard by lowering barriers to market access for sustainable energy goods and services. Currently, such efforts are included in a broader endeavour to remove obstacles to trade in environmental goods. Removing trade-related barriers to environmental goods and services more broadly will indeed also help countries tackle other pressing environmental problems, such as air, soil, and water-pollution, in an efficient manner.

While the World Trade Organization (WTO) Doha mandate calls for a reduction, or as appropriate, elimination of tariffs and non-tariff barriers on environmental goods and services (EGS), the challenging political landscape as well as disagreement over technical details have meant that little progress has been achieved. Meanwhile, the Asia-Pacific Economic Cooperation (APEC) economies have moved ahead, concluding a first-ever trade outcome on environmental goods in 2012, agreeing to voluntarily reduce applied tariffs to 5 per cent or less on a list of goods contained within 54 product subcategories.

Building on the APEC initiative, trade policymakers from initially 14 WTO members in January 2014 announced their intention to launch plurilateral negotiations on environmental goods. These negotiations for an "Environmental Goods Agreement" (EGA) are aimed at eliminating tariffs on environmental goods on a plurilateral basis. EGA members would then extend the benefits arising from the outcome, namely lower or zero import duties, to all members on a most-favoured nation (MFN) basis. An EGA would only come into effect once the EGA members that were negotiating the deal made up a " critical mass" in terms of their share in world trade for the final basket of goods slated for tariff reduction.The thresholds for such "critical mass" has however not been defined precisely as a percentage figure of world trade.

While the focus of the EGA negotiations has so far been on removing tariffs, non-tariff measures such as technical standards and associated conformity assessment (CA) procedures are increasingly becoming more important as obstacles to trade, due to the way they are designed and applied. This is

true even if they are introduced for perfectly legitimate reasons such as safety, product performance, health and environmental protection.

Mutual recognition agreements are a type of co-operative arrangement between countries that seek to resolve impediments created by standards-related conformity assessment procedures. MRAs are usually bilateral government-to-government agreements in specific sectors, although private-sector driven MRAs are increasingly roping in laboratories and accreditation agencies from numerous countries.

This paper makes a case for a plurilateral MRA on testing, inspection, and conformity-assessment specifically covering relevant environmental goods identified for tariff liberalisation during the first phase of EGA negotiations. Such an MRA could be an outcome or deliverable for a possible second phase of the EGA that might focus on addressing non-tariff barriers to environmental goods. The paper highlights steps as well as difficulties involved in the conformity assessment process and the role that conformity assessment plays as a non-tariff measure. It emphasises the "value-added" that a plurilateral MRA focussing specifically on environmental goods would bring, not least by underscoring the importance of removing obstacles to trade in a sector characterised by evolving and newly emerging technologies set to play a critical role in safeguarding the planet's environmental future. Over time, such a plurilateral MRA could eventually transform itself into a multilateral one by providing an incentive to the rest of the WTO membership, not part of the current EGA, to meaningfully engage in environmental goods talks.

The author of this paper, Mahesh Sugathan, is a senior research fellow with ICTSD and an independent consultant focussing on the areas of international trade, climate change, and sustainable energy and has numerous publications on these topics. He has worked as a consultant on projects with various other organisations including the World Bank, the International Trade Centre, and the United Nations Environment Programme (UNEP) as well as with the private-sector. Prior to establishing his consultancy practice, he also worked as Programme Coordinator-Economics and Trade Policy Analysis at ICTSD.

This paper was conceived by ICTSD and developed by ICTSD's Global Platform on Climate Change, Trade and Sustainable Energy. The concept of the research originates in ICTSD's work on a Sustainable Energy Trade Agreement (SETA). In particular, it has been informed by a workshop organised by ICTSD and the SETI Alliance in Geneva at the WTO on 16 June 2015 titled "Environmental Goods: A Deliverable on NTMs in the EGA?"

As a valuable piece of research, it has the potential to inform innovative policy responses on sustainable energy trade initiatives as well as more broadly on environmental goods and will be an important reference tool for policymakers involved with environmental protection, clean energy expansion and energy access as well as trade negotiators. We hope that you will find the paper to be a thought-provoking, stimulating, and informative piece of reading material and that it proves useful for your work.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

In January 2014, 14 WTO members announced their intention to pursue a plurilateral trade-liberalisation initiative on environmental goods resulting in an Environmental Goods Agreement (EGA) that would eliminate tariffs on an agreed upon list of environmental goods. The talks that are still ongoing have focused so far on tariffs, but once tariffs are lowered or eliminated the focus will inevitably shift to non-tariff measures (NTMs) that are increasingly having a greater impact as barriers to trade in goods. NTMs comprise a wide range of measures such as technical regulations, standards, and conformity assessment measures. While they are often introduced for legitimate public policy reasons such as safety, product performance, and environmental protection, they may also be designed and administered in a manner that serves domestic protectionist purposes.

As non-tariff measures grow in number, numerous recent studies and surveys reveal that procedural obstacles such as conformity assessment (CA) procedures are particularly burdensome for exporters. However, such procedures are amenable to co-operative solutions within a trade-negotiating framework and are thus a particularly important type of NTM that the EGA negotiations could address in the future.

Conformity assessment has been defined by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) as any activity concerned with determining directly or indirectly that relevant requirements such as health, safety, and performance are fulfilled. More tangibly, conformity assessment refers to a variety of processes such as certification, testing, and inspection whereby goods and services are determined to meet voluntary or mandatory standards or specifications.

Because of the way it is designed, third-party conformity assessment, conducted by independent third parties such as government agencies or designated private testing bodies, may frequently impose additional costs on exporters. Barriers emerge from the need for exporting firms to have their products tested overseas, adjust to diverse conformity assessment requirements, undergo duplicative testing, face lengthy approval times, or overcome discriminatory requirements in overseas markets. Lengthy CA procedures imply additional costs associated with revenue foregone due to lost sales while the product is under review.

There are various types of regulatory co-operative arrangements to address CA-related obstacles depending on different levels of trust, formality, and degree of engagement. Some are simple information exchange and trust-building that lowers transaction costs. Others include more advanced mutual recognition of accreditation systems and testing procedures enabling exporters to carry out conformity assessment of products prior to export in domestic laboratories located in their own country.

Mutual recognition agreements (MRAs) between accreditation authorities is a co-operative solution that enables accredited test and inspection reports and certificates of compliance to be accepted by member accreditation authorities throughout the world. Increasingly, government authorities in many countries are recognising MRAs as meeting their regulatory requirements. MRAs can vary in terms of degrees of trust and involvement ranging from mutual recognition of CA results to mutual recognition of technical regulations (including through recognition of equivalence), and finally full harmonisation of both technical regulations and associated conformity assessment procedures.

MRAs are encouraged under Article 6.1 of the TBT Agreement. The Agreement provides for acceptance by WTO Members of the results of CA procedures in other member states as well as technical competence of their relevant CA bodies, taking into account guides and recommendations by international

standardisation bodies. The article also encourages Members to permit participation of other member states' CA bodies in their domestic CA procedures on terms no less favourable than those accorded to their own CA bodies. The TBT agreement further obliges Members to use "relevant international standards" as the basis for both technical regulations (Article 2.4) as well as for conformity assessment measures (Article 5.4) except where it becomes ineffective or inappropriate.

A plurilateral MRA that is agreed to under a future NTM negotiating phase of the EGA should have a number of important building blocks. The building blocks relate to:

(i) Product coverage;

(ii) Provision of consultation and right to withdraw from the MRA in case of continuing market access obstacles;

(iii) Providing a listing of relevant CA bodies which the MRA would cover;

(iv) Provision of information exchange and sectoral contact points;

(v) Establishment of joint committees to ensure effective functioning of the agreement;

(vi) Ensuring preservation of "regulatory space" within an MRA;

(vii) Provisions to address issues of overlap with other existing MRAs signed by parties to the EGA MRA;

(viii) Provisions to address agreements that EGA MRA members may have signed with third countries;

(ix) Consideration of "opt-in" "opt-out" flexibility as well as technical and financial assistance for individual EGA members; and

(x) Provisions to address terms and conditions of accession to the EGA MRA.

WTO delegates may also wish to ponder upon a number of process-related considerations for an MRA. These include:

(i) Whether the MRA should necessarily involve all EGA members or provide instead for an "opt-in" or "opt-out" provision or a phased accession;

(ii) How an MRA will be expanded to accommodate any new environmental goods that would be added subsequently to the EGA tariff deal agreement; and

(iii) Whether an MRA for environmental goods would be a stand-alone agreement or integrated as part of a broader EGA.

In addition, EGA negotiators could draw lessons from discussions within the WTO on addressing NTMs for information technology products. These include:

(i) Promoting transparency by establishing a centralised database of administrative requirements, such as CA procedures and technical requirements by area of certification (such as safety, environment etc.), by product and by country;

(ii) Streamlining CA procedures, such as global recognition of the Supplier's Declaration of Conformity (SDoCs);

(iii) Dealing with the proliferation of marking requirements; and

(iv) Harmonising practices in the area of energy-efficiency requirements.

Despite the prevalence of numerous other MRAs – governmental as well as private – there are a number of compelling reasons to consider a stand-alone MRA by EGA members that focuses solely on environmental goods. These include:

(i) The limited sectoral scope of existing MRAs that often do not cover all major environmental goods as well as important traders;

(ii) The varying scope of private sector MRAs that for example do not cover all aspects of testing activity along a product's life cycle;

(iii) The significance of spotlighting the environmental goods sector through the MRA as a global sector of importance with newly emerging technologies that gets the trade-facilitation attention it deserves; and

(iv) The need to bring on board economies that have not yet engaged in bilateral MRAs with a large number of trading partners.

Not least, a standalone MRA for environmental technologies will serve to underscore once again the importance of a sector that plays a critical role in addressing not only local, but also global environmental challenges such as climate-change. It will also serve as a catalyst and incentive for greater engagement in trade negotiations on environmental goods by WTO Members that are presently not part of the EGA, but whose exporters are affected by prevailing CA measures on environmental goods. These countries will surely stand to benefit from the enhanced market access (over and above zero tariffs) that an environmental goods MRA would ensure.

INTRODUCTION: LAUNCH OF NEGOTIATIONS ON THE ENVIRONMENTAL GOODS AGREEMENT (EGA)

A reduction in trade barriers to environmental goods will lower trade policy imposed costs, thereby promoting easier access to such goods as well as their wider global diffusion and deployment. This can lead to a host of environmental benefits, as well as broader sustainable development benefits.

In January 2014, 14 WTO members announced their intention to pursue a plurilateral trade liberalisation initiative on environmental goods resulting in an Environmental Goods Agreement (EGA) that would eliminate tariffs on an agreed upon list of environmental goods. The benefits of such tariff reductions will be extended to the rest of the WTO membership. The agreement is to come into effect once a "critical-mass" threshold, in terms of trade in the goods agreed upon, is reached by the EGA negotiating members. The plurilateral initiative builds on earlier efforts to liberalise environmental goods, such as the WTO's Doha Round as well as the 2012 Voluntary Initiative, agreed upon by APEC members.

Given the stalling of environmental goods negotiations under the Doha mandate (linked to slow overall progress of the Doha Round), the EGA is the only truly global trade initiative on environmental goods that seeks to eliminate tariffs as part of a legally binding outcome. The APEC initiative is voluntary and can, in principle, be rolled back.

One of the challenges to negotiations thus far has been the lack of agreement on what exactly constitutes an "environmental good." WTO and APEC members have so far proposed lists of goods they deem important from an environmental point of view, rather than try to define what an environmental good is. A similar approach has been undertaken in the EGA negotiations.

The EGA negotiations presently aim only at eliminating import tariffs on an agreed upon final list of environmental goods. However, given that most traders of environmental goods, particularly OECD countries, already impose very low or zero tariffs, the real market access related challenges will lie in addressing non-tariff barriers to trade.[1] Such barriers are diverse and may include burdensome administrative requirements to standards and conformity assessment measures.

Once tariffs have been eliminated, it is therefore conceivable that EGA members will turn their attention to non-tariff barriers. This paper seeks to be of guidance to EGA negotiators during that phase by focusing attention on one specific type of non-tariff measure that is relevant to imports of a large number of environmental goods; namely the implementation of conformity assessment measures related to technical standards. Given the importance of conformity assessment procedures and their significant potential to constitute a non-tariff barrier for international trade, it is indeed worthwhile exploring options for reducing their trade distortive impacts in the specific case of environmental goods.

Chapter 1 of this paper highlights some of the impediments to trade created by non-tariff measures and the reason why conformity assessment (CA) procedures deserve particular attention including in the context of environmental goods. Chapter 2 delves into the definition, scope, and functioning of CA procedures and CA bodies as well as lists the three major types of conformity assessment. Chapter 3 examines the impact of CA measures on trade, highlighting examples where available from the clean energy sector. Chapter 4 outlines how mutual recognition agreements (MRAs) are increasingly playing a role in streamlining conformity assessment procedures, including in specific sectors, thereby helping to facilitate trade amongst signatories to the MRA. Based on this increased role, Chapter 5 of the paper goes on to advocate a plurilateral MRA, specifically on environmental goods, including clean energy technologies that would include all EGA members as part of a second phase of talks.

1. NON–TARIFF MEASURES AND IMPEDIMENTS TO TRADE

The focus of the EGA has been on tariffs. However, as tariffs on manufactured goods are becoming dismantled through multilateral, regional, and bilateral trade negotiations as well as autonomous liberalisation, non-tariff measures (NTMs) are frequently coming to the forefront as more powerful impediments to trade. Non-tariff measures (NTMs) are generally defined as policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices, or both.[2]

The detailed classification of NTMs by the United Nations Conference on Trade and Development, (UNCTAD) identifies and distinguishes among the various forms of non-tariff measures.[3]

Table 1: Non-Tariff Measures Classification by Chapter

Imports	Technical Measures	A. Sanitary and Phytosanitary (SPS) Measures
		B. Technical Barriers to Trade (TBT)
		C. Pre-shipment Inspection and Other Formalities
	Non-technical Measures	D. Contingent Trade Protective Measures
		E. Non-automatic Licensing, Quotas, Prohibitions and Quantity Control Measures other than for SPS or TBT reasons
		F. Price-control measures including additional taxes and charges
		G. Finance Measures
		H. Measures Affecting Competition
		I. Trade-related Investment Measures
		J. Distribution Restrictions
		K. Restrictions on post-sales services
		L. Subsidies (including export subsidies)
		M. Government Procurement Restrictions
		N. Intellectual Property Rights (IPRs)
		O. Rules of Origin
Exports		P. Export-related Measures

Source: UNCTAD (2012), Classification of non-tariff measures, February 2012 version

As table 1 reveals, NTMs comprise a wide-variety of measures including Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) measures. The latter deals with pre-defined specific risks related to human health (mostly about food safety) and animal or plant health or life and protection from pests. TBT measures, on the other hand, deal with technical regulations, standards, and conformity assessment (CA) procedures.

While many of these measures are put in place for legitimate reasons such as public-health, safety, performance quality, and environmental protection, they may also be designed and administered in a manner that serves domestic protectionist purposes.

Several studies have pointed out the costs and restrictive trade impacts of NTMs. A 2007 report on Trade and Climate change by

the World Bank[4] suggests that varied levels of tariffs and NTBs are a huge impediment to the transfer of these climate-friendly technologies to developing countries. For example, energy-efficient lighting in India is subject to a tariff of 30 percent and a nontariff barrier (comprising quotas and import-ceilings) equivalent of 106 percent.

The WTO's 2012 World Trade Report[5] notes that non-tariff measures will continue to grow as public policy and regulation expands in terms of both breadth as well as complexity, requiring an additional layer of analysis to tease out the trade effects of alternative measures. The report points out that NTMs frequently figure in disputes at the WTO and that there is a growing challenge of co-operation among WTO members.

WTO notifications appear to indicate an upward trend in Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) measures since the mid-1990s, accompanied by a rise in specific NTM-related concerns raised in various WTO committees. Despite the growth of WTO disputes, however, the evidence is more nuanced as only 11 percent of disputes cited the SPS Agreement and 12 percent cited the TBT Agreement (as of 2012), whereas the GATT was cited more than half the time (55 percent). One explanation that has been put forward is that committee-based co-operation mechanisms have been more effective in diffusing conflicts for TBT and SPS disputes.

ITC business surveys also show that "procedural obstacles" are raised in more than 70 percent of burdensome non-tariff measures (NTMs). These include not just conformity assessment procedures but also time-constraints and unusually high-fees and "informal payments." All of these account for more than half of the reported obstacles.

Drawing on the above-mentioned ITC surveys cited in the WTO report on non-tariff measures and its highlighting of procedural obstacles, this paper focuses on one type of non-tariff measure –namely conformity assessment measures. One reason for this focus is that CA measures are commonly encountered by all major exporters of goods. Business surveys highlighted later on in the paper reveal that conformity assessment measures account for a significant portion of measures perceived as obstacles by the private sector. Another reason for focusing on conformity-assessment measures is that they more amenable to solutions arrived at by trade negotiators within a trade-negotiating framework. Product standards that form the basis of CA measures on the other hand have to be negotiated in a standards-setting rather than trade-negotiating framework. Hence a discussion on product standards themselves and the problems they may create for exporters fall outside the scope of this paper

This paper will focus only on conformity assessment issues related to TBT measures. For environmental goods that are industrial products, TBT-related conformity assessment measures appear more relevant as a target of focussed efforts to address non-tariff measures.

What can the EGA do about NTMs on environmental goods?

CA measures will certainly impact environmental goods as well given the exposure of environmental goods such as solar and wind-energy equipment to technical standards including new ones as technology evolves. Once tariff elimination negotiations are successfully completed under an EGA, negotiators could explore the possibility of concluding a plurilateral MRA for conformity assessment on environmental goods. This could be a concrete deliverable of possible future negotiations on non-tariff barriers under the EGA. This MRA would streamline conformity assessment for all EGA members for the agreed upon list of environmental goods (perhaps with a positive impact on broader industrial sectors that contain or include environmental goods) and greatly serve to expedite trade for these products. In addition, if developing countries also join the MRA, it would also open up opportunities for their environmental goods exports (beyond just duty-free most favoured

nation access) to EGA members' markets. In case future accession to the MRA is made possible independent of accession to the tariff elimination segment of the EGA, developing countries could benefit whether or not they are part of the EG tariff-elimination agreement.

2. CONFORMITY ASSESSMENT PROCEDURES

Definitions and Scope of CA Procedures

The leading standard setting bodies, the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), define conformity assessment as "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled." In more tangible terms, conformity assessment refers to a variety of processes whereby goods and services are determined to meet voluntary or mandatory standards or specifications."[6]

Conformity assessment (CA) activities include certification, testing, and inspection, and are frequently required by government regulators to ensure that firms' products and production processes meet minimum health and safety standards. Conformity assessment involves a number of steps. These commonly include:

(i) **Testing** is a technical operation carried out according to a specific procedure established to verify one or more characteristics of the product subject to CA. Testing is the most common form of conformity assessment on which rest other types of procedures, such as inspection and certification. Products can be tested at different stages of their life. For example, the Electricity Generating Authority of Thailand conducts "ex-post" testing on labelled appliances to ensure that they are compliant with energy-efficiency standards.

(ii) **Inspection** involves the examination of a product, productdesign, a process or a process of installation and its compliance with specific requirements, or on the basis of professional judgement with general requirements. Examples of inspection procedures related to climate-change are commonly found in the buildings sector. For instance, in order for homes in the U.S. to qualify for an Energy Star label, they must be inspected by an independent home energy rater.

(iii) **Certification** is a CA tool that involves an independent external body issuing a written assurance (the certificate) stating that a product, building, or company conforms to specific standards. Certification enables market transparency, strengthens consumer confidence and suppliers' reputation, expands their market, and promotes new products. Testing and inspection are often essential steps to awarding certification. For example, all regulated energy-using products (such as domestic electrical appliances) sold in Canada must carry a mark indicating that the energy performance of the product has been verified. The mark must belong to an accredited independent certification body or a provincial authority.

(iv) **Accreditation** is the procedure by which an authority formally recognises a particular person or organisation's competence to carry out specific conformity assessment tasks. This can apply to testing laboratories, inspection bodies, or certification bodies. Accreditation bodies do not deal directly with the verification of product specifications themselves. Instead, they assess the bodies carrying out such functions.[7] For example, under the Hong Kong Mandatory Energy Efficiency Scheme, energy test reports must be issued by a laboratory that has been assessed and evaluated by a recognised independent certification body, or that has been accredited by the competent bodies of Hong Kong, China, or their counterparts in other countries, according to mutual recognition agreements. According to the ISO, accreditation bodies are not themselves regarded as conformity assessment bodies.[8]

(v) **Metrology** is a type of conformity assessment that involves ensuring that measuring equipment used in conformity assessment complies with the requirement for such use. For example, in order to

facilitate its compliance assessments on minimum-efficiency standards developed by the US Department of Energy, the National Institute of Standards and Technology developed a specialised power-loss measurement system for testing the power transformers used in transmission and distribution of electric power."[9]

Conformity Assessment Bodies are organisations that carry out testing, inspection, and certification. They comprise:

(i) **Laboratories** that determine particular characteristics or compliance with standards or specifications by using scientific methods to test or measure samples or items. Laboratories can be classified as being either "testing" or "calibration" laboratories.

(ii) **Inspection bodies** that examine individual products, services, and processes using measurement and professional judgement to establish compliance with standards or specifications.

(iii) **Systems certification bodies** certify (but do not "accredit") organisations for compliance with quality management standards such as ISO 9001 and environmental management standards such as ISO 14001.

(iv) **Product certification bodies** grant licences for manufacturers to mark their products as complying with particular standards or specifications. License-granting decisions are based on test and inspection reports on prototypes or selected examples of the product as well as other criteria such as packaging and labelling.

(v) **Personnel certification bodies** certify personnel as being qualified according to defined criteria or standards (for example, auditors undertaking ISO 9001 and ISO 14001 audits).

Accreditation authorities accredit conformity assessment bodies. Accreditation is formal recognition that a conformity assessment body has been independently assessed by an accreditation authority in the five key areas. These include competence and experience of staff; integrity and traceability of equipment and materials; technical validity of methods; validity and suitability of results; and compliance with appropriate management systems standards and competence to carry out its services in a professional, reliable, and efficient manner.[10]

The laboratories and inspection bodies that are accredited are deemed competent to undertake specific tests or inspections (scope of accreditation). This entitles them to issue certificates of compliance. These certificates may take the form of test or inspection reports. Accreditation authorities are usually government-owned or government-endorsed and supposedly operate away from political and commercial influence. There is regular peer-review of accreditation bodies, based on evaluations against an international standard.

For goods being exported and imported, regulators frequently require the testing, inspection, and certification to be carried out in organisations accredited by their national accreditation authority.

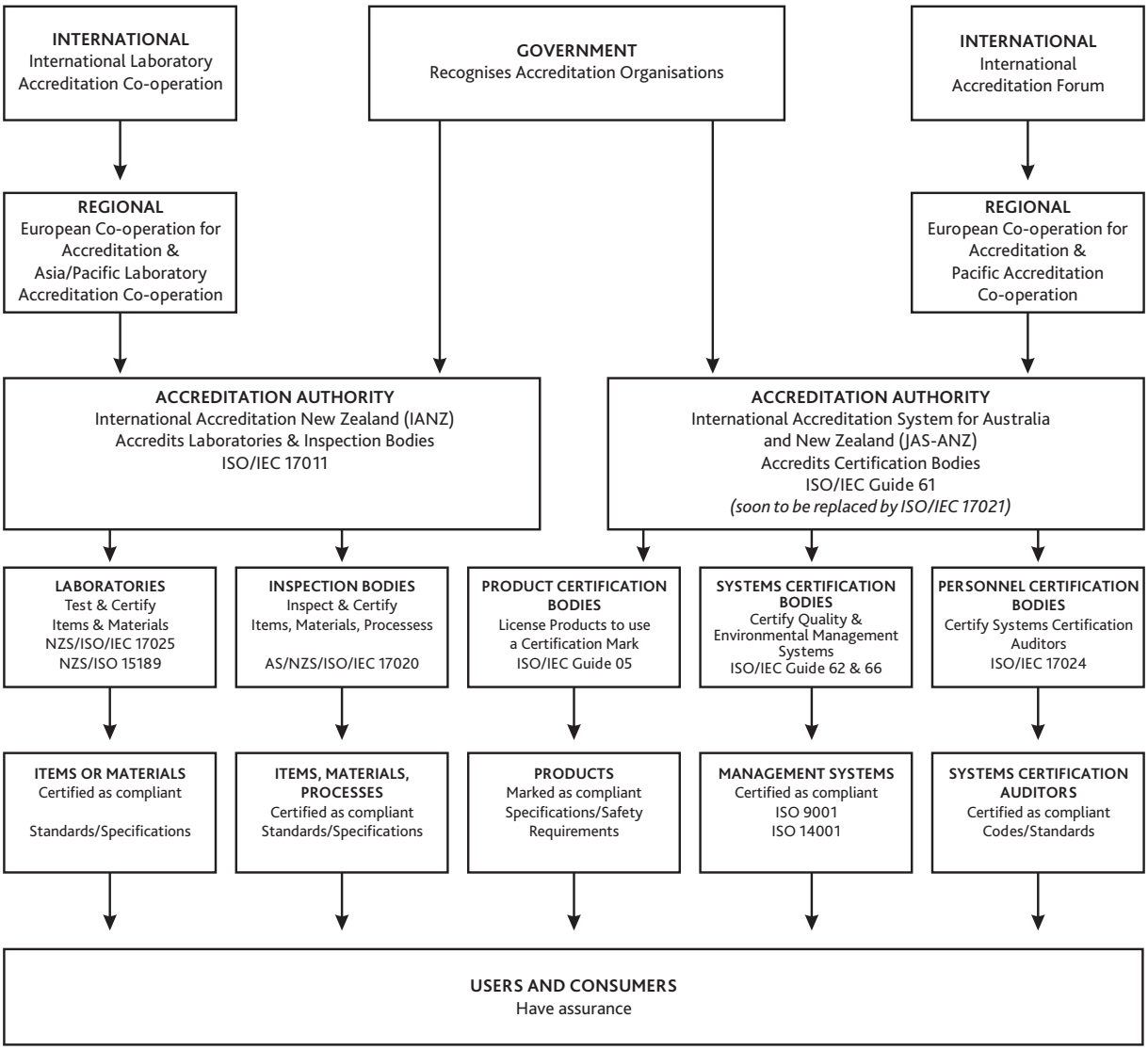
CA measures also have implications for international trade. While these measures seek to test compliance with standards aimed at legitimate societal objectives, they also have the potential to become a trade barrier if they are unduly burdensome on exporters. The impacts on traders are explained in further detail below. Acknowledging such impediments, most WTO member signatories have developed similar conformity assessment structures to meet their domestic needs while at the same time seeking to facilitate international trade. Mutual recognition arrangements (MRAs) have been established between accreditation authorities enabling accredited test and inspection reports and certificates

of compliance to be accepted by member accreditation authorities throughout the world. Increasingly, government authorities in many countries are recognising such arrangements as meeting their regulatory requirements.[11]

Accreditation bodies have also established regional cooperation groups such as, the Asia Pacific Laboratory Accreditation Cooperation (APLAC)[12] and the International Laboratory Accreditation Cooperation (ILAC) at the international level.[13] These arrangements will be explained in detail under the section on private-sector led MRA initiatives.

Figure 1 below illustrates various processes involved in conformity assessment as well as the roles of selected international, regional, and national bodies using the example of New Zealand.

Figure 1. New Zealand Conformity Assessment Infrastructure



Source: Conformity Assessment in New Zealand, www.ianz.govt.nz

Types of Conformity Assessment Procedures

Three major types of conformity assessment procedures have been identified. These comprise: First-party conformity assessment, or a supplier's declaration of conformity (SDoC), conducted by the supplier; second-party conformity assessment conducted by the customer; and third-party conformity assessment conducted by independent third parties, such as government agencies or designated private testing bodies (See Table 2).

Table 2: Conformity Assessment Types

Item	**First party** (also known as supplier's declaration of conformity, or SDoC)	Second party	Third party
Conformity assessment party	Manufacturer, importer, or other supplier.	Customer	Regulatory body or independent testing body.
Description	Procedure by which the manufacturer, importer, or distributor provides written assurance of the conformity of its products to specified requirements.	Buyer requires and certifies that the products it wishes to purchase from suppliers meet one or more standards. Purchaser's own inspectors usually perform the assessment of the supplier's products.	Conformity assessment by technically competent body not under control of either buyer or seller. Assessment undertaken in government laboratories or by accredited third-party bodies.
Industry examples	Testing and certification by automobile manufac-turers and importers demonstrating their vehicles' compliance with mandatory government safety or environmental standards. Certification by petroleum producers that motor oil conforms to selected voluntary Society of Au-tomotive Engineering Standards (SAE), (i.e., SAE 10W - 40W)	Certification testing by aircraft manufactures of parts of components produced by their suppliers to assure conformance to their specifications.	Regulatory authorities, or accredited third-party testing organizations, assess compliance of new pharmaceuticals with mandatory health and safety standards

Source: National Institute of Standards and Technology (NIST), ABCs of the US Conformity Assessment System cited in Johnson, Christopher (2008): Technical Barriers to Trade: Reducing the Impact of Conformity Assessment Measures, USITC Working Paper.

First-party declarations or SDoCs are predominantly used in product sectors with a low-to-medium health, safety, and environmental risk. However, the use of SDoCs are not exclusively guided by a risk analysis approach, but also depend on regulatory and legal infrastructure existing in the sector.[14] While the simplest version of SDoCs requires no test reports, certificates, or specified form of documentation beyond the declaration of conformity itself, SDoC regimes are frequently more complex. For example, they require suppliers to use test reports prepared by competent third parties, as opposed to conducting tests in-house, or to register their products through an organisation located in the export market. In fact, complex types of SDoC may involve procedures that are as rigorous as those typically carried out under third-party CA. SDoCs have been advocated by many due to their benefts, including flexibility and non-discriminatory treatment for the firm in choosing the location to have a product tested, decreased uncertainty associated with mandatory testing by designated testing bodies based in foreign countries, high compliance levels, and lower administrative costs. Some experts believe that the operation of MRAs will evolve to reflect amendments to their scope and that there will be a shift away from mandatory certification towards greater reliance on supplier's declaration of conformity.[15]

However, in order for SDoCs to be effective, suppliers must be given incentives to be honest and accurate in certifying their goods, and to incur penalties for for incorrect certifications. This usually requires a country to have strict product liability laws underpinned by an effective market surveillance regime, appropriate resources and enforcement powers, penalties for false or misleading declarations, and consumer redress.[16]

Second-party conformity assessment usually happens because a purchaser or customer wants a stronger guarantee of conformity than that provided by the supplier. In this case, the purchaser's own inspectors assess the supplier's products. Unlike first- or third-party conformity assessment, second-party assessment has not been the subject of trade discussions since its use is limited to cases involving requirements between buyers and sellers in the marketplace and not national or government-mandated requirements.[17]

When the health, safety, or environmental impact concerns of a product are deemed too important to be left to the manufacturer's or supplier's own assessment (such as medical equipment) or too expensive or technically difficult for the customer to perform itself (such as electrical equipment), government regulators may require **third-party assessment** to verify product safety. Third-party conformity assessment is often undertaken in government laboratories or by third-party bodies recognised and accredited by regulatory authorities. This type of certification, because of the way it is designed, may frequently impose additional costs on exporters and is highly relevant in the discussion of non-tariff measures to international trade. It is this type of assessment that will be the scope of focus of MRA discussions in the rest of the paper.

3. RELEVANCE OF CONFORMITY ASSESSMENT PROCEDURES FOR INTERNATIONAL TRADE

Complying with product-related certification can entail significant costs for exporting firms, particularly small and medium enterprises (SMEs), and this is even truer for such firms based in developing countries. Barriers may emerge from the need for exporting firms to have their products tested overseas, adjust to diverse conformity assessment requirements, undergo duplicative testing, face lengthy approval times, or overcome discriminatory requirements in overseas markets.[18] Lengthy conformity assessment procedures also imply additional costs associated with revenue foregone due to sales that are lost while the product is under *review*. This can be especially burdensome for time-sensitive products like textiles or certain high technology products. In the case of sectors like clean energy, it is possible that it could also lead to delays in completion of renewable energy projects that may incur penalties from regulators in case of missed deadlines. Costs of certification may also vary from sector to sector, but they can be particularly high for private standards. Regulating the use of CA measures is essential and the WTO seeks to do this at a multilateral level through the WTO's Technical Barriers to Trade (TBT) Agreement.

The WTO TBT Agreement

The WTO's Agreement on Technical Barriers to Trade contains a number of provisions relevant to international and regional systems for conformity assessment measures. Article 9.1 of the TBT Agreement states that "Members shall, wherever practicable, formulate and adopt international systems for conformity assessment."

Article 6.1 on the recognition of conformity assessment by central government bodies is also relevant from a trade-facilitation perspective. Under the Article, the results of CA procedures in other member states as well as technical competence of their relevant CA bodies (taking into account guides and recommendations by international standardisation) can be accepted by WTO Members. Members are also encouraged to be willing to enter into negotiations for mutual recognition of CA procedures and permit participation of other member states' CA bodies in their domestic CA procedures on terms no less favourable than those accorded to their own CA bodies (for the full text of Article 6.1 please see Annex Box A.1).

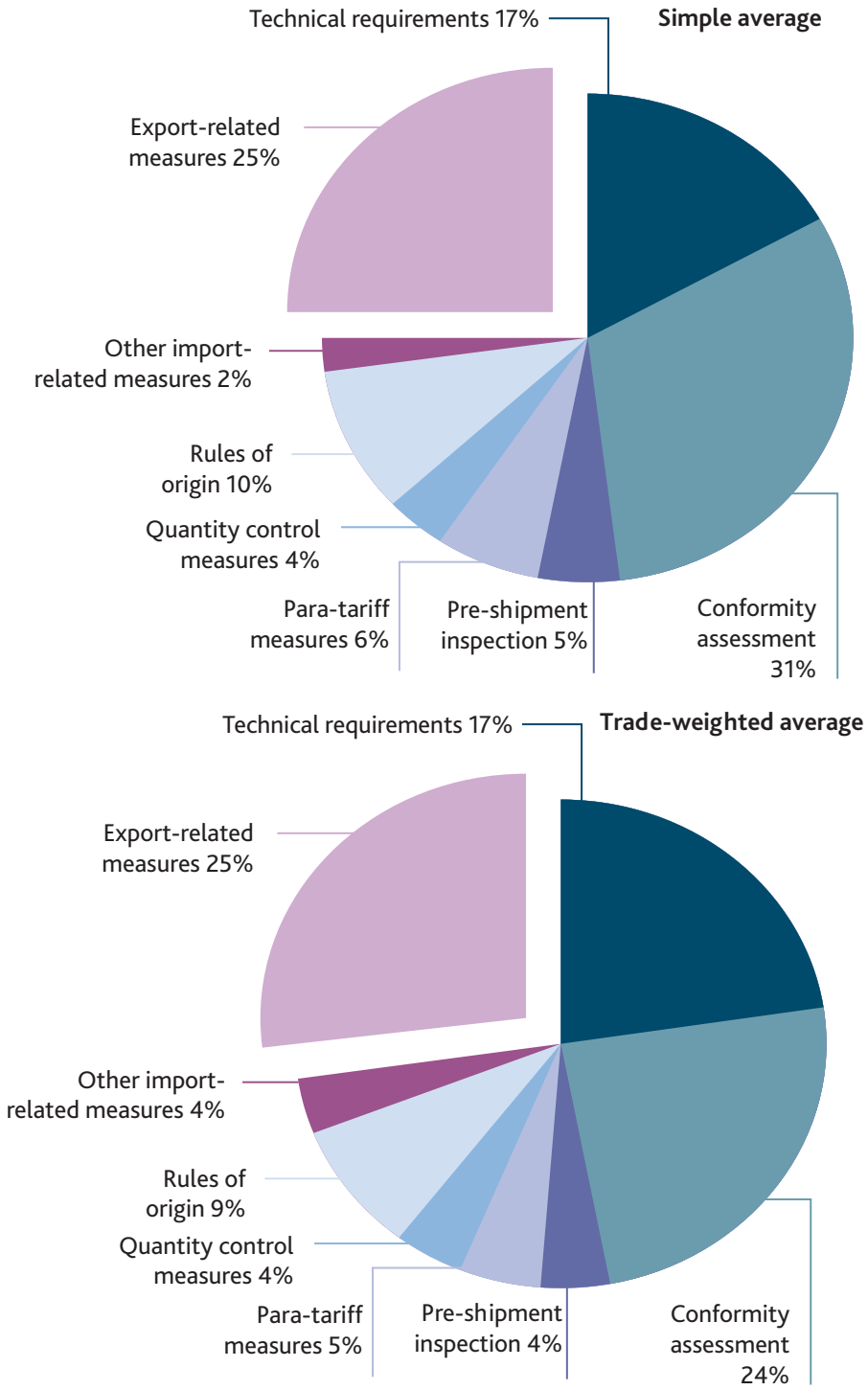
Article 6.1.1. is particularly significant in that it refers to recognition of reliability of foreign conformity assessment results and related technical competence through indicators such as "verified compliance, for instance through accreditation, with relevant guides or recommendations issued by international standardizing bodies."

The TBT agreement further states that Members shall use "relevant international standards" as the basis for both technical regulations (Article 2.4) as well as conformity assessment measures (Article 5.4) except where it becomes ineffective or appropriate for domestic policy purposes (e.g., fundamental geographical or climatic factors or technological problems).[19]

Sector-specificities and Business Perceptions of CA-related Obstacles

According to business surveys conducted by the International Trade Centre (ITC) in 11 developing and least-developed countries, conformity assessment procedures indeed accounted for about 31 percent of measures regarded as burdensome by businesses based on a simple average (the arithmetic mean) and 24 percent when the trade-weighted average was used.[20] (See Figure 2 below).

Figure 2. Burdensome Non-tariff Measures (NTMs) by Type of Measure, 2010 (percentage)



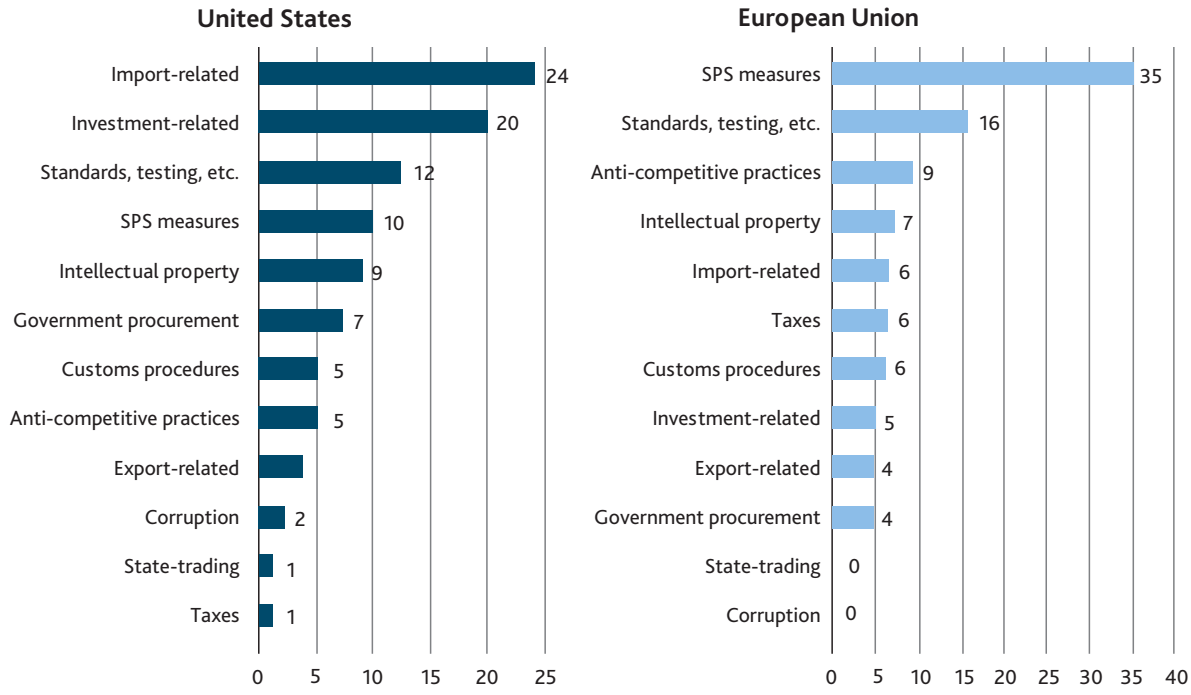
Source: ITC business surveys on NTMs.

Note: Surveys were conducted in 11 developing and least-developed economies: Burkina Faso, Egypt, Jamaica, Kenya, Madagascar, Mauritius, Morocco, Paraguay, Peru, Rwanda and Uruguay. Minerals and arms are excluded from the survey

The ITC data, further broken down by sub-category of measures, reveals that for both TBT measures (combined technical requirements plus conformity assessment), product certification was cited as the most burdensome (by 37 percent of reporting firms). This is followed by product testing at nine percent and inspection requirements at eight percent. These three sub-types reportedly account for more than half of all firm complaints about TBT measures.

Figure 3 below draws from a USITC CoRe NTM database which merges business surveys from the US and EU and combines them with information from WTO trade policy reviews. It excludes trade policy review data so as to focus exclusively on developed country concerns.

Figure 3. Non-tariff Measures Facing US and EU Exporters, 2009 (percentage)



Source: Martinez et al. (2009) as cited in WTO (2012).

The data reveal that the top problems facing US exporters are import-related measures (24 percent), investment measures (20 percent), standards and testing (12 percent), SPS measures (10 percent), and IPRs (9 percent). Standards and testing are more important for EU exporters falling in second place (16 percent) after SPS measures (35 per cent).

According to a survey on the effects of SPS-related private standards conducted by the WTO Secretariat,[21] 17 out of the 22 respondents included a reference to high certification costs. The survey also notes that developing country exporters consider compliance with private standards to be a prerequisite for exporting to a large number of developed-country markets. Examples provided in the survey estimate the average annual certification fee could amount to between USD 2000 and USD 8000 for a private standard.

Studies, as illustrated in the WTO 2012 World Trade report focussing on non-tariff measures (WTO 2012), also appear to show a greater importance of conformity assessment measures in the agricultural sector than for manufactured goods. The nature of conformity assessment costs may also differ among goods. For instance, terminal telecommunication equipment and automotive components require an initial approval before they can be exported, while for dairy products each consignment has to be tested both prior to its export as well as at the port of entry. Thus, conformity assessment is a fixed cost for telecom equipment and auto components, whereas it is a variable cost for exporters of dairy products.[22]

The presence or absence of a well-developed and functioning technical infrastructure for conformity assessment in an exporting country provides no guarantee that importing countries will accept the results of the exporter's conformity assessment procedures. In many cases countries apply additional domestic requirements or variations to international standards. Some countries also insist on carrying out their own audits of the manufacturer.[23] Even if importing countries rely on internationally harmonised product standards or accept another country's standards as equivalent, they may still require that conformity assessment be carried out in their own countries.

While conformity assessment costs have not been quantified in a systematic manner (given measurement difficulties associated with aspects such as the opportunity cost of lost or delayed sales), the extent of their being perceived as obstacles to trade clearly emerges from several surveys and case studies.

During the course of an ICTSD survey carried out for this paper, a major manufacturer of electrical equipment and energy-efficient motors stated that there were basically no minimum energy performance standards (MEPS) in place that would accept only IEC based test reports without additional requirements (such as compulsory product registration, laboratory calibrations, and cross-testing with annual audits and specific documentation requirements). Countries had a number of additional requirements that manufacturers needed to fulfil. The box below highlights some examples of these additional country-specific requirements.

Box 1: Examples of Additional Requirements Imposed by Countries for Manufacturers for Energy-efficient Motors

Australia accepts IEC based test reports, but each motor type (with full IEC based test reports) must be registered to the Australian government webpage against a certain fee. Additionally, these registrations need to be revalidated at a given time interval.

China accepts IEC based test reports, but these must be conducted at 380V 50Hz instead of 400V 50Hz. Additionally, quite extensive information about the manufacturer's testing laboratory, equipment and calibrations, and personnel data needs to be provided to authorities together with motor rating plate samples and motor photographs. Furthermore, authorities need to visit the manufacture's plant. After approval from authorities, each motor delivered needs to be equipped with a specific sticker attached on motor. Approval is product and production location specific.

Brazil doesn't accept IEC test reports as their testing standard differs from IEC. To start with, the manufacturer needs to select three sample motors and test them at 440V 60Hz. Then the motors and the test reports are sent to Brazil for local laboratory re-testing. In cases where the manufacturer's test results are within certain limits (determined by local laboratory results), their laboratory will be approved and they will need to provide technical data to Inmetro to get products registered. Once registration is in place, the manufacturer can start to sell motors. However, a specific manufacturer registration number must be stamped on the rating plate with some other specific data. Additionally, motors need to be delivered to a local laboratory for annual testing according to Inmetro requirements.

Korea accepts IEC test reports, but these must be conducted at 380V or 440V 60Hz. There are two possibilities depending on the case to get products approved. Either the manufacturer sends its motors to Korea for local laboratory testing or the manufacturer tests the motors at the presence of a Korean laboratory representative. Additionally there is an extensive documentation package to be provided to authorities. Approval is product and production location specific. After approval from authorities, each motor delivered needs to be equipped with a specific sticker attached on the motor.

Canada accepts only test reports conducted in test laboratories that are certified by them or by NAVLAB. Tests must be carried out according to Canadian Standards Association (CSA) testing standards at 460V and/or 575V 60Hz depending what kind of voltage range approval the manufacturer aims for. In addition to energy efficiency measurements, products must have a CSA Safety certificate. After certification of the manufacturer's laboratory, which includes cross testing of motors in Canada at a CSA laboratory, an extensive set of documentation is needed for the certification process. Once approved, the manufacturer is audited on a quarterly basis. On a yearly basis sample motors are subject to cross-testing, first at the manufacturer's lab and then at a CSA lab.

USA accepts only test reports conducted in test laboratories that are certified by NAVLAB according to IEEE112B or CSA390 testing standards. The manufacturer has two options, either to test each motor type it wants to sell, or take five samples of five different motor types and test them. Then it must compare the tested values to those obtained by a design software used to measure the motors. If the measured and calculated results are within a certain tolerance, the manufacturer's software is qualified as an AEDM, which enables the manufacturer to sell motors designed with the software without testing. However,

Box 1: *Continued*

each rating must be filed to the Department of Energy and only those filed ratings can be sold. Additionally, each manufacturer gets a compliance certification number that must be stamped on the motor rating plate. Furthermore, efficiency marking according to NEMA standards is required.

Mexico accepts only test reports conducted in local test laboratories according to IEEE112B or CSA390 testing standards. The manufacturer needs to send its motors for testing in order to obtain the certificates enabling sales. Some product documentation and specific marking on the products is required. Only motors sold through distribution channels (products are stocked) are subject to these requirements.

Japan accepts test reports according to IEC. The only additional requirement is annual reporting of sales volumes to authorities.

Source: Interviews conducted with manufacturer of energy-efficient motors

Earlier, OECD surveys[24] carried out during 2004-05 revealed mixed perceptions of CA within the business community. On the positive side, the evidence suggested that businesses in the most highly developed countries did not see conformity assessment as a major barrier to trade. It was also found that agreements to recognise conformity assessment results across borders, whether negotiated between governments, accreditation bodies, or CABs themselves, did lead to reduced costs of conformity assessment. On the other hand, there remained pockets of concern – specific sectors in specific countries which presented problems – and two wider problems appeared to be unsolved. First, the use of SDOC appeared not to have grown significantly in recent years, despite the encouragement it has been given by the WTO. Second, CABs appeared still to use and value multiple accreditation (accreditation by accreditation bodies in more than one country), despite efforts to encourage cross-border recognition, and despite the high cost of multiple accreditation. This practice could harm developing countries in particular.

In certain sectors, such as electrical safety and electromagnetic compatibility, two problems were identified: an over-reliance on CA to balance inadequate structures for market surveillance and product liability leading to additional costs and delays; and the increasing complexity of the specifications in the regulations themselves. In the electrical sector, a supplier might need to master not only electrical safety and EMC, but also wider health and safety regulations, regulations for indoor and (separately) outdoor noise, vibration, waste disposal, restrictions on the use of chemicals or other substances, or other wider requirements for eco-design of products. These problems would be particularly challenging for developing countries.

Suggested Approaches to Address CA-related Concerns for Electrical, Electronic, and Energy-efficient Products

Within both the OECD as well as forums such as APEC, a number of suggestions and proposals have been put forward to improve efficiency as well as to address CA-related concerns.

At the OECD, some suggestions that have been proposed by experts for electrical and electronic products including:

(i) Define common regulatory objectives in non-technical terms, and apply them worldwide without national variations.

(ii) Make wider use of international standards for requirements and for conformity assessment procedures. However, some latitude would be needed to account for national differences in their natural environment such as extreme altitude,

heat, or humidity levels, all of which can affect the performance of electrical and electronic equipment (including many environmental goods such as ambient monitoring equipment and solar panels).

(iii) Make wider use of the IEC CB (Certification Body) scheme, in which many developing countries have heretofore not participated, or are only now starting to participate. Given the wide membership of the IEC and its role in international standard-setting it would also lead to acceptance of a single test certificate that would be acceptable in all markets (For details on IEC Certification Body Scheme see Chapter 4).

(iv) Strengthen market surveillance, backed by stronger international co-operation to track and publicise unsafe goods.

(v) Once strong market surveillance has been established, move to SDoC without mandatory certification. For the duration that mandatory certification remains necessary, regulatory authorities could recognise voluntary MRAs such as those operated by the IAF (International Accreditation Forum), ILAC (International Laboratory Accreditation Cooperation), and the IEC CB scheme.[25]

In the specific case of energy-efficient products there were also issues with non-aligned specifications and tests (OECD, 2015).

A growing number of experts have called for a major rethinking of current test procedures in the area of energy performance. Not only is this because of non-comparability between national testing standards, but also because many of the tests are not keeping up with technological change – especially the incorporation of microcontrollers. On the other hand, a number of regional initiatives show encouraging signs. One example of co-operation is that between Canada, Mexico, and the United States to verify the test procedures for refrigerator-freezers and freezers, room air conditioners, and electric motors. This co-operation is carried out through the The North American Energy Working Group (NAEWG) established in 2001 by the governments of Canada, Mexico, and the United States.[26]

A recommendation emerging in the APEC context was a 1999 proposal to develop energy conversion algorithms that could effectively allow a measure of energy or performance under one test procedure to be converted to an equivalent and comparative value under a different test procedure without the need for additional retesting, thus saving costs and time. This proposal was one among many strategies recommended by the APEC Steering Group on Energy Standards (SGES) after a series of studies in response to a request from APEC Energy Ministers in the late 1990's. This request asked "... to develop firm proposals for establishing a base on which mutual acceptance of accreditation of energy-efficiency testing facilities and the results of tests performed at these facilities, could be achieved, and to work towards the establishment of bases of comparison of the outcomes of testing to different standards so that the need to test to multiple standards could be reduced or eliminated."[27]

4. THE RELEVANCE OF MRAs FOR CONFORMITY ASSESSMENT

MRAs as Part of Regulatory Co-operative Arrangements

MRAs form part of a broader universe of regulatory co-operative arrangements that provide an opportunity for countries to influence how TBT or SPS measures are implemented in their trading partners. Promoting good regulatory practises (GRPs) in such arrangements facilitates discussion and information exchange on the trading partner's measures by providing common criteria and language for assessing measures. Formalised, standing regulatory cooperation arrangements (for example, the Transatlantic Economic Council between the United States and Europe) may lead to greater certainty about a partner's regulatory responses to future problems or products. Moreover, regulatory cooperation in general is about trust-building among regulators with regard to regulatory systems and outcomes. This helps to provide confidence that TBT measures and conformity assessment procedures strike an efficient balance between policy objectives and trade restrictions.[28]

There are various types of regulatory co-operative arrangements depending on different levels of trust, formality, and degree of engagement. These range from simple information exchange and trust-building that lowers transaction costs, to the more advanced mutual recognition of accreditation systems and testing procedures enabling exporters to carry out conformity assessment of products prior to export in domestic laboratories located in their own country. Other categories of arrangements that involve still greater levels of trust and engagement include mutual recognition of conformity assessment results, mutual recognition of technical regulations (including through recognition of equivalence), and full harmonisation of both technical regulations and associated conformity assessment procedures.

The level of ambition for a particular regulatory cooperation activity may differ depending on the contexts of the countries involved. For example, regulatory cooperation between two major trading partners that enjoy strong economic ties could aim at full harmonisation, thereby leading to a high level of convergence. On the other hand, regulatory cooperation between two economies with very different political systems and levels of development and income would likely aim at a lower level of ambition – such as increasing understanding and confidence-building to facilitate trade. There can also be sectoral arrangements (including voluntary ones) within regional organisations, such as APEC and ASEAN. These can also include various mechanisms with progressive levels of ambition under a single scheme, enabling partners to co-operate to the extent feasible depending on their national circumstances.[29] The WTO's TBT Agreement (Article 6.3) also encourages members to reach agreements on mutual recognition of results of each other's conformity assessment procedures.[30]

Box 2: Example of Regulatory Co-operation in the Clean Technology Area

APEC: Green Technologies

The APEC Sub-Committee on Standards and Conformance (SCSC) has worked to promote regional cooperation in environmental sectors through information exchange, enhanced transparency, and providing a baseline for the use of standards, technical regulations and conformity assessment procedures. These initiatives include the "Solar Technologies Standards and Conformance Initiative", and "Green Buildings and Green Growth". In the context of these initiatives, APEC members have recognized the need to conform with international standards, to promote mutual recognition of certification, and to increase stakeholder participation in the standards-setting process.

Several case studies have been undertaken on green technologies under the umbrella of these initiatives, particularly on "green buildings", and in this respect work is being undertaken in cooperation with the World Bank and the World Green Building Council. In this context, there was recognition of the need to enhance consistency in the use of terminology related to green buildings in order to increase transparency and enable producers to better meet requirements across different regional partners. Standards development work at APEC on green buildings involves both public and private stakeholders. The APEC SCSC is also collaborating with the ASEAN Consultative Committee on Standards and Quality in the context of work on green buildings.

This initiative illustrates how a policy objective that is common to the APEC membership, namely addressing market failures with cross-border effects related to environmental pollution, is being tackled through regulatory cooperation. In addition, this example shows how countries are trying to engage at an early stage on regulatory cooperation with respect to green technologies to ensure that future regulatory approaches further environmental protection and trade.

Source: WTO (2012) and TBT Regulatory Cooperation Workshop, 8-9 November 2011. https://www.wto.org/english/tratop_e/tbt_e/wkshop_nov11_e.htm

This paper explores possibilities within the EGA of mutual recognition of accreditation systems and testing procedures as well as conformity assessment results. It does not venture into convergence or harmonisation of standards or technical regulations on environmental goods, which may best be dealt with in other appropriate forums and may be too ambitious to pursue within the context of an EGA.

Scope of Traditional Government to Government Conformity Assessment MRAs

Traditional MRAs enable conformity assessment bodies (CABs) that are nominated by party A to certify products for access to party B's market according to party B's technical legislation.[31] Attestations of conformity referred to in MRAs include test reports, certificates, authorisations, and marks of conformity as required by legislation and regulations identified in the Sectoral Annexes in the MRA as issued by designated conformity assessment bodies of signatories to the MRA.[32]

In certain cases, MRAs presuppose equivalence between regulations as in the case of MRAs between the EU and Switzerland. In certain other cases MRAs, such as those between the EU and the US, are based on similar underlying regulations. In most cases though, MRAs do not constitute a use or acceptance of the standards or technical regulations of a party by the other parties, or mutual recognition of

the equivalence of such standards or technical regulations. MRAs only confer benefits on importing parties for products subject to mandatory certification given that trade-related issues do not arise if importers rely on SDoCs.

Agreements on Conformity Assessment and Acceptance of Industrial Products (ACAAs) are a specific type of mutual recognition agreement concluded between the EU and third countries based on the full alignment of the legislative system, including standards, and implementing infrastructure of the country concerned with those of the European Union.[33] The conclusion of an ACAA is the end result of extensive dialogue and assistance in the fields of technical regulations and standards for industrial products. The EU argues that the adoption of the EU system by other third countries contributes to the elimination of technical barriers to trade, thereby increasing the accessibility of third countries' markets to products from the EU and vice versa.

MRAs do not preclude private-sector bilateral and multilateral agreements among conformity-assessment bodies. The 1999 EU-US Mutual Recognition Agreement (MRA)[34] provides, for instance, that the Agreement does not intend to displace private sector bilateral and multilateral arrangements among conformity assessment bodies or to affect regulatory regimes. Thus, this allows for manufacturers' self-assessments and declarations of conformity.

Article 2 of the EU-US MRA is a good example of the purpose of many MRAs. It specifies the conditions under which each party will accept or recognise results of CA procedures (produced by the other party's conformity assessment bodies or authorities) in assessing conformity to the importing party's requirements (as specified on a sector-specific basis in the Sectoral Annexes) and provides for other related cooperative activities. If any obstacles to such access arise, consultations are promptly held. The EU also has a Protocol on European Conformity Assessment (PECA) that forms an important step of the accession process of candidate countries and is related to the implementation of EU technical regulations in the candidate countries.[35] All of these elements could provide useful lessons for other MRAs that may emerge in the future, including on environmental goods.

Sectoral Landscape

MRAs are often limited in sectoral scope. The EU-US MRA, for instance, covers only selected sectors such as telecoms equipment, electromagnetic compatibility (EMC), electrical safety, recreational craft, pharmaceutical good manufacturing practices (GMPs), and medical devices.

All MRAs between signing parties focus on a select number of sectors where agreements may be more easily reached. Some of the sectors included may have greater relevance to environmental goods (including clean energy equipment and services) than others, for e.g. telecommunications and electrical equipment. Annex table A.1 shows a list of some of the major MRAs signed to date (mainly by the EU) – both "binding" and "non-binding" – and lists the sectors covered.

In some cases, these sectoral agreements also list the specific regulatory requirements of one party with which designated conformity assessment bodies in the other party shall assess compliance. This is shown, for example, in the case of the Sectoral Annex on Automotive Products to the European Community in the Australia Agreement on Mutual Recognition in Relation to Conformity Assessment, Certificates, and Markings where the underlying EU and Australian regulations are listed.

Box 3: Case Example of MRAs Integrated into a Regional Trade Agreement: The EU-Singapore Free Trade Agreement (FTA)

The EU-Singapore Free Trade Agreement (FTA), concluded in December 2014, is an interesting example of a bilateral or regional trade agreement incorporating specific provisions on non-tariff measures (NTMs). In Chapter 4, Article 7.5 dealing with **"Standards, Technical Regulations and Conformity Assessment"** is noteworthy. Article 7.5 states in paragraph 3 that:

"With respect to products listed in Chapter 84 of the Harmonized System (except 8401) as well as in HS 850231 and 854140:

(a) the Union will accept declarations of conformity from Singapore suppliers under the same terms as from Union suppliers for the purpose of placing such products on the market, without any further requirements; and

(b) Singapore will accept EU declarations of conformity or test reports, for the purpose of placing such products on the market without any further requirements. Singapore may require mandatory third party testing or certification under the conditions set out in Article 5 (Safeguard Measures) of Annex 4-A.

For greater certainty, this paragraph is without prejudice to either party applying requirements not related to the products referred to in this paragraph, such as zoning laws or building codes."

In Chapter 7, Article 7.5 dealing with **"Standards, Technical Regulations and Conformity Assessment"** is also very relevant. Article 7.5 states in paragraph 3 that:

"With respect to products listed in Chapter 84 of the Harmonized System (except 8401) as well as in HS 850231 and 854140:

(a) the Union will accept declarations of conformity from Singapore suppliers under the same terms as from Union suppliers for the purpose of placing such products on the market, without any further requirements; and

(b) Singapore will accept EU declarations of conformity or test reports, for the purpose of placing such products on the market without any further requirements. Singapore may require mandatory third party testing or certification under the conditions set out in Article 5 (Safeguard Measures) of Annex 4-A.

For greater certainty, this paragraph is without prejudice to either party applying requirements not related to the products referred to in this paragraph, such as zoning laws or building codes."

Source: http://trade.ec.europa.eu/doclib/press/index.cfm?id=961

Box 3, which highlights the example of the EU-Singapore FTA, is a clear example of how an EGA could incorporate provisions relevant to clean energy and other environmental goods that pertain to conformity assessment measures and could apply to all EGA signatories (with due provisions for phase-in, etc. depending on individual members' capacities).

The Trans-Pacific Partnership Agreement (TPP) signed on 4th February 2016 incorporates a number of important provisions from the TBT Agreement. However it is noteworthy in adding a number of new and interesting provisions. These include for instance Article 8.6 (1) (the first time in a plurilateral trade agreement) that obligates parties to extend MFN and national treatment benefits to each other with regard to the treatment of conformity assessment bodies and Article 8.6 (4) (a) which prohibits parties from requiring that conformity assessment related inspection, testing and certification be carried out by bodies located within its territory. A number of provisions also encourage mutual recognition of CA bodies and procedures among parties and those based on international and regional mutual recognition initiatives.

The TPP also includes many broad-ranging transparency related provisions. For example, it specifically refers parties to, inter alia, the relevant Decisions and Recommendations Adopted by the WTO Committee on Technical Barriers to Trade since 1 January 1995 (G/TBT/1/Rev. 10) in determining whether a proposed technical regulation or conformity assessment procedure may have a "significant effect on trade of other Members" and should be notified pursuant to relevant articles of the TBT agreement. This would include consideration of elements such as (a) the value or other importance of imports in respect of the importing and/or exporting Members concerned whether from other Members individually or collectively (b) the potential growth of such imports; and (c) difficulties for producers in other Members to comply with the proposed technical regulations. Further the TBT decision document states that "the concept of a significant effect on trade of other Members should include both import-enhancing and import-reducing effects on the trade of other Members, as long as such effects are significant."

While the services chapter of the TPP does not cover too much additional ground with regard to domestic regulation beyond the WTO GATS agreement it includes annexes on various services including engineering and architectural services particularly relevant to clean energy delivery. These Annexes on engineering and architectural services provide for Parties recognise the work in APEC to promote the mutual recognition of professional competence in engineering and architecture, and the professional mobility of these professions, under the APEC Engineer[36] and APEC Architect frameworks[37]. It also obliges TPP members to authorise their relevant bodies to work towards becoming authorised to operate APEC Engineer and APEC Architect Registers and such bodies to also to enter into mutual recognition arrangements with the relevant bodies of other Parties operating those registers.

Private Sector Multilateral Initiatives for Conformity Assessment

Both government and private regional and international systems for conformity assessment can contribute to solving the problems related to multiple testing and certification or registration for traders and industries. Delegations to the WTO's TBT Committee have discussed the work of the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF) as useful examples of international cooperation in the area of conformity assessment. Both of these represent private sector led rather than government initiatives. The objective of both organisations is to have one conformity assessment result accepted in every market place through multilateral mutual recognition arrangements among accreditation bodies with a shared vision of a single global system of conformity assessment.

ILAC is the global authority for laboratory and inspection body accreditation. In 2000, ILAC's 36 full members, comprising laboratory accreditation bodies from 28 economies worldwide, signed a mutual recognition arrangement to promote the acceptance of technical test and calibration data for exported goods. The Arrangement came into effect on 31 January 2001 and was extended in October 2012 to include the accreditation of inspection bodies.

As of 8 May 2015, there were 80 accreditation bodies from 74 economies that were signatories to the ILAC Agreement (see Annex Table A.2 for the full lists). The scope of the bodies that signed the MRA range from those that conducted only testing, to those undertaking testing, calibration, and inspection. In addition to the full MRA signatory members, ILAC membership also extends to selected regional co-operation bodies (see below). It further includes affiliate accreditation bodies as well as other stakeholders such as representative international, regional, and national organisations with an interest in the work of ILAC.[38]

Established in 1993, the IAF oversees accreditation in the fields of the certification of management systems, personnel, and products.[39] Some 70 accreditation bodies from 63 economies are members of the IAF Multilateral Recognition Agreement (MLA).[40] The purpose of the IAF MLA is to ensure mutual recognition of accredited certification between signatories to the MLA and subsequently the acceptance of accredited certification in many markets based on a single accreditation. The IAF MLA for Quality Management Systems (QMS) has been in operation since 1998 when 14 IAF members signed the agreement. The IAF MLAs for Environmental Management Systems (EMS) and Product Certification became operational at the IAF Annual Meetings held in 2004. In 2010, the three MLAs were combined into one MLA with various scopes.[41] Discussions on the ILAC and IAF have taken place in the context of periodic reviews of the TBT Agreement at the WTO.[42]

ILAC and IAF arrangements comprise ILAC and IAF accreditation body members that are deemed competent for conformance to ISO/IEC 17011 and IFAC-ILAC "A" series documents through a peer-evaluation process. Signatories of the bodies must recognise the certificates, reports, and results issued by organisations accredited by all other members of the arrangements. They are also structured to build on existing and developing regional MRAs and MLAs established around the world. Thus, for example, the ILAC MRA recognises the European Co-operation for Accreditation (EA), the Asia-Pacific Laboratory Accreditation Co-operation (APLAC), and the IAAC. The IAF MRA recognises the European Co-operation for Accreditation (EA), Pacific Accreditation Co-operation (PAC), and the Inter-American Accreditation Co-operation (IAAC). IAF members who are also signatories of these regional MLAs are automatically accepted into the IAF MLA for the corresponding scope.[43]

The IEC System for Conformity Testing and Certification of Electrical and Electronic Components, Equipment and Products (IECEE) Certification Body (CB) Scheme

The IECEE CB scheme is the world's first truly international system for mutual acceptance of test reports and certificates dealing with the safety of electrical and electronic components, equipment, and products. It is a multilateral agreement among participating countries and certification organisations. A manufacturer utilising a CB test certificate that is issued by one of the accepted National Certification Bodies (NCBs) can obtain certification marks of the latter, within their scope of adherence, in the countries where the accepted NCBs are located. The scheme is based on International Electrotechnical Commission (IEC) standards. In case some of the members' national standards are not yet completely harmonised with IEC standards, national differences, special national conditions (SNCs), and regulatory requirements are permitted so long as countries formally declare and detail them to the IEC Secretariat. The CB scheme uses the CB test certificates to attest that product samples have successfully passed conditions specified by the test and conform to

the requirements of the relevant IEC standards. Where applicable, the CB test certificate as well as the associated test report can also include the differences, SNCs, and regulatory requirements of various member countries.

Presently, there are 52 Member Bodies in the IEC, 65 participating NCBs, and 267 Testing Laboratories.[44] Except for Costa Rica, Hong Kong, and Chinese Taipei, all EGA members are IECEE members.

Box 4: IEC Certification Initiative in Renewable Energy Applications (IECRE)

An interesting example of an international initiative launched to facilitate certification to international standards and smoothen international trade is the IEC System for Certification to Standards Relating to Equipment for use in Renewable Energy Applications (IECRE). The system aims to facilitate international trade in equipment and services for use in Renewable Energy Sectors while maintaining the required level of safety. It also aims, among others, to operate a single global certificate with harmonised application to ensure uniform implementation and mutual recognition between test labs and certification bodies. It also aims for acceptance by local and national authorities or other bodies requiring and benefiting from certification.

Approval by IEC CAB (Conformity Assessment Board) at its June 2013 meeting, led to the setting up of the IECRE Forum, a working group bringing together stakeholders from the renewable energy sector as well as officers and leading experts from the IEC CA side. The Forum was in charge of drafting the new System's Basic Rules, which were approved by CAB at its June 2014 meeting. The IECREE will be organised in sectors and schemes. Three sectors that have been currently identified are: Solar PV, Wind Energy and Marine Energy. Each of these sectors will be able to operate Schemes that cover:

- Products, e.g. components and systems
- Services, e.g. installations and other related offers of the sector
- Personnel, e.g. covering the competence of those working in the sector

At present, the IECRE has 16 countries that have joined the system. These include: Austria, Canada, China, Denmark, Egypt, France, Germany, Hungary, India, Japan, Kenya, Korea, Netherlands, Spain, UK and USA.

Source: www.iecre.org

5. DESIGNING THE BUILDING BLOCKS FOR A PLURILATERAL MRA ON ENVIRONMENTAL GOODS: CONSIDERATIONS AND LESSONS FROM EXISTING AGREEMENTS

Given the breadth of existing MRAs, there is a rich body of evidence to draw lessons from, informing a potential MRA under the EGA.

As pointed out earlier in the paper, trade negotiators for the EGA are presently focussed on agreeing to a basket of environmental goods on which tariffs can be reduced. Once the tariff-reduction phase is over, it is likely that negotiators may wish to focus their attention on addressing non-tariff measures. In this scenario, the extent to which governments would be motivated to reach a mutual recognition agreement on conformity assessment for goods listed in the EGA will depend on many factors that would arguably be similar for other industrial or manufactured goods as well as agricultural products for fuel use (such as ethanol). According to the above-mentioned WTO report on NTMs, governments may cooperate to limit the strategic competitive effects of NTMs under three different market conditions. Specifically, a rationale for NTM cooperation emerges in markets with horizontally differentiated goods and services, when products exhibit quality differences, and when NTMs create fixed costs that alter firm entry and industry composition. These conditions should then apply to at least one or more of the goods covered under any final EGA. It is likely that CA would not be an issue with regard to many products in the final EGA list (depending also on the importing country in question), but problems may still persist for others. A discussion and identification of problematic products and challenging markets in the environmental goods context for conformity assessment may be a good starting point for the discussion on non-tariff barriers as part of an EGA.

In the event that EGA members do agree to negotiate a plurilateral government-to-government MRA on conformity assessment for the environmental goods sector, the scope should ideally extend to all the EGA negotiating parties and cover the final list of goods for tariff reduction that are eventually agreed upon at the conclusion of the negotiations.

Building Blocks for a Plurilateral MRA on Environmental Goods

The following would be important elements and considerations to bear in mind for such an agreement:

i. **Coverage of Products:** Members may wish to clearly specify (as in the case of many bilateral MRAs) the coverage of products to which the conformity assessment MRA would apply. While an obvious option would be to limit it to the exact number of goods agreed upon in a final list, it could also make more sense to designate it at the HS-6 digit level to simplify matters as well as capture a broad range of products. An even more ambitious option could be to designate sectoral annexes for the EGA MRA based on the broad sectors that the final list of environmental goods falls under. Such MRAs could of course benefit many other goods in addition to specified environmental goods that fall under the same sector or category. One consideration would be rapid technological change, which may lead to new products being developed under the same HS-6 digit code but for which the capacity of testing laboratories in many countries might need to be re-assessed or re-evaluated periodically. Such periodic re-assessment might be required if members agree to go with a "living list" and should be built into any MRA that might be drawn up. EGA members may also wish to plan for unanticipated developments, such as safety considerations, that might arise as new technologies develop.[45]

ii. **Provision of Consultation and Right to Withdraw from an MRA in Case of Continuing Market-access Obstacles:** Bilateral MRAs, such as the EU-US MRA,

provide for consultations if (despite the MRA) either party continues to encounter market access obstacles. Article 2 of the US-EU agreement also provides that in the absence of a satisfactory outcome of such consultations, the party that has alleged its market access has been denied may (within 90 days of such consultation) invoke its right to terminate the Agreement in accordance with Article 21. Such a provision could also be considered for parties to an EGA MRA.

iii. **Listing of Relevant Conformity Assessment Bodies:** An EGA MRA could specify a list of the relevant conformity assessment bodies that would be eligible to undertake testing, inspection, certification, and accreditation related measures for the listed environmental goods. Drawing on language found in many bilateral MRAs, EGA members could agree that each party "...recognises that the conformity assessment bodies listed in the Sectoral Annexes fulfil the conditions of eligibility to assess conformity in relation to its requirements as specified in the Sectoral Annexes" and also that "the Parties shall specify the scope of the conformity assessment procedures for which such bodies are listed."[46] EGA members might also wish to consider relevant bodies as already included in ILAC and IAF if this is deemed acceptable for the environmental goods under consideration.

iv. **Information Exchange and Sectoral Contact Points:** Members could appoint and confirm in writing contact points to be responsible for activities listed in the MRA.

v. **Joint Committees:** The establishment of joint committees are a common feature of many MRAs. These include representatives for each party responsible for the effective functioning of the agreement. Such committees are established with the objective of properly implementing an MRA and are composed of representatives of the contracting parties responsible for the effective implementation of an agreement. In the case of the EU's MRAs, the Joint Committee is in certain agreements supplemented by Joint Sectoral Groups under a sectoral annex. These are responsible for activities specifically related to that sector. For the EU's PECA, in the case of the EU, the Commission represents EU Member States. Such committees could also be set up for various types or categories of environmental goods in an EGA MRA.

vi. **Preservation of Domestic Regulatory Authority:** An EGA MRA could also include provisions that provide for the preservation of domestic regulatory authorities of participating EGA members. For instance, Article 15 of the US-EU Agreement states that nothing in the text would limit the authority of a party to determine legislative, regulatory, and administrative measures, or the level of protection it considers appropriate for safety of the following: protection of human, animal, or plant life, or health; the environment; consumers; and otherwise (with regard to risks within the scope of the applicable Sectoral Annex). Article 15 also empowers regulatory authorities to take any measures necessary, including withdrawing products from the market or prohibiting imports.

vii. **Overlap with Existing MRAs among EGA Members:** It is likely that for a number of products, an EGA MRA provision could overlap with provisions in bilateral MRAs concluded between individual EGA members, such as the US and EU or Australia and New Zealand. In such cases there could be a provision in the EGA MRA that the stronger or more ambitious provisions would prevail with respect to the specific parties concerned. Here provisions on rules of origin may also be relevant to consider. Article 4 (1) of the EU-New Zealand agreement for instance provides that the agreement "…shall apply to products originating in the parties to the Agreement according to the non-preferential rules of origin."[47] Also, Article 4 (2) states that "…in case of conflicting rules, the non-preferential rules of the

party on whose territory the goods are marketed are determinative." At the same time, Article 4 (3) asserts that "to the extent that the products referred to in paragraph 1 are also covered in a Sectoral Annex to the Agreement on Mutual Recognition in relation to conformity assessment between the European Community and Australia, this Agreement shall also apply to products of Australian origin."[48]

Furthermore, given that a number of laboratories or conformity assessment bodies of EGA members may already be signatories to private sector MRAs under ILAC and IAF, EGA members if they so wish may also consider making a reference that the EGA MRA would not affect the rights and obligations of such bodies under the ILAC and IAF MRAs.

viii. **Agreements with Third Countries:** An EGA MRA may also wish to include a clause that pertains to any agreements that EGA members may have signed with third parties. One example is Article 19 in the EU-US agreement that "provides that except if there is written agreement with other countries, obligations contained in mutual recognition agreements concluded by either party with a party not a signatory to this Agreement (a third party) shall have no force and effect with regard to the other party in terms of acceptance of the results of conformity assessment procedures in the third party."

ix. **Consideration of "Opt-in" "Opt-out" Flexibility as well as Technical and Financial Assistance for Individual EGA Members based on Domestic Capacities of their Conformity Assessment Bodies:** EGA Members could consider an opt-in or opt-out option for a plurilateral MRA based on their domestic capacity assessment of various CABs. Members that have a certain degree of domestic CA capacity and have entered into MRAs previously (such as the EU, US, Australia, New Zealand, and Japan) could join or opt-in early on as MRA members. Other members with insufficient domestic capacity could be provided with additional time to join based on domestic capacity-building and technical assistance for their national conformity assessment bodies. Lessons could be drawn from EU's PECA for accession members. In addition, as an incentive for developing countries to join the EGA, technical and financial assistance for upgrading CA bodies where required by developing countries could also be included as part of the EGA package.

x. **Issue of Extension of MRA "membership" to non-EGA Members:** Another issue that could be debated is whether an EGA MRA would be open to non-EGA members to join (similar to tariff benefits being extended on a most favoured nation basis to non-participating members once the EGA is finalised) or whether MRA membership would be made conditional on membership in the tariff-cutting initiative. This would be up to EGA members to decide. It is likely that a number of non-EGA members would not face any CA related challenges for a large number of products in the list. Also, they may already benefit from bilateral MRAs or membership of their testing and CA bodies in ILAC or IAF (all of which may automatically cover a large number of environmental goods). On the other hand, if the EGA MRA is opened up to these members they could certainly benefit in terms of fast-tracked market access for their environmental goods exports (once they are in compliance with the MRA requirements).

The Need for a Stand-alone MRA on Environmental Goods

The question may be legitimately asked why a separate stand-alone MRA on conformity assessment is required for environmental goods given the existence of numerous other MRAs – both bilateral as well as regional. The drivers for such an MRA stem from the following:

Firstly, as has been pointed out earlier, most existing MRAs are limited in terms of sectoral scope and do not yet include all major traders of a wide variety of environmental goods. For example, the ILAC does not include certain EGA members like Iceland, nor laboratory accreditation and testing bodies of certain EU member states. Similarly, the IAF does not include relevant accreditation bodies in EGA members like Iceland and Israel. In terms of goods coverage there could well be an overlap of a number of environmental goods with bilateral government-to-government MRAs that apply, for instance, to electrical goods or machinery. However, all relevant environmental goods may be difficult to cover as part of MRAs with a narrow sectoral scope. Thus an overlap is not necessarily a problem particularly if the MRA on environmental goods agreed upon is more ambitious in coverage of goods and implementation-related provisions.

Secondly, the scope of numerous private sector agreements often vary. The competence of some bodies that signed the ILAC MRA for instance extend only to testing, while other bodies also cover testing, calibration, and inspection bodies. According to one private-sector respondent, all aspects of testing along a product's life cycle was not covered.[49] Moreover, in certain sectors there appears to be scepticism among regulatory agencies of private-sector led solutions and their impartiality. Given that environmental goods will increasingly involve new and emerging technologies that are tried and tested only in a limited number of countries, it would be useful to ensure that accreditation bodies in major trading countries have the necessary capacities and skills to inspect and test the performance and safety of these technologies. This could be reflected through a stand-alone MRA for environmental goods.

Thirdly, even if a new exclusively environmental goods focused MRA duplicated, referred to, or built on other existing MRAs (both governmental as well as private sector), it would still be distinctive in applying to and highlighting a sector that has global environmental significance and includes all the important traders in environmental technologies (however broadly or narrowly such goods are defined). It could also serve to focus attention on the capacities of accreditation and inspection bodies to deal with new environmental technologies as they emerge and pre-empt the creation of non-tariff measures.

Lastly, an EGA MRA also has the potential to bring economies on board that have not really engaged to a meaningful extent in bilateral MRAs with a large number of trading partners in other sectors. A notable example is China (see Annex Table A.1) which is signatory to an MRA with the EU identifying reliable and safe economic operators who would benefit from simplified customs procedures. An MRA signed between China and New Zealand is limited to electrical and electronic equipment, electric soft motor starters, and audio products. The China-New Zealand MRA concluded as part of the China-New Zealand FTA is, in fact, the first agreement under which Chinese authorities have accepted the results of testing, inspection, and certification by Conformity Assessment Bodies accredited in another jurisdiction.[50] Normally China requires all testing for imported products to be carried out by domestic labs, including for compliance with international standards which involves the additional costs of a consultant. Such costs could be brought down at least for environmental goods through an MRA covering such goods listed in the EGA. This in turn would also benefit Chinese exports to any markets that require domestic laboratories to test products or domestic accreditation agencies to certify them.

Other Process-related Considerations

The process of negotiating an MRA will also involve some questions and considerations that delegates may wish to ponder. For instance, should the MRA necessarily involve all EGA members or could there an opt-in or opt-out provision or a phased accession to the MRA once domestic CA capacities of certain members improve? If the MRA confines itself to the final list of goods agreed upon for the

tariff-cutting phase, how will it be expanded to accommodate any new technologies that may be included on a regular basis as part of a possible "living list?" This will certainly be an important consideration as new technologies may require capacity-building and training for laboratories in EGA members (for instance to test the compliance of these technologies with newly developed performance and safety standards). Nevertheless, as experience from expansion of the ITA shows, adding new products can still prove contentious.[51] Determination of environmental credibility may crop up again before new products can be included. A new product is automatically captured for import tariff elimination purposes if it falls under a broader HS-6 digit sub-heading already benefiting from zero duties. However, conformity assessment is a different matter altogether. New products may incorporate new design and performance features which existing laboratories may not be equipped to test.

Hence, EG MRA negotiators could consider flexibility with regard to accession to the MRA with a phase-in scheme envisaged to enable certain members to join when they are ready. This was also the case with the ITA tariff-cutting initiative where 29 members were part of the original deal. As more members acceded, the ITA eventually reached 81 participants which, at the time of writing, covered 97 percent of world trade in information technology products.[52]

It may be more difficult to consider an automatic extension of MRA benefits to non-EGA members, unlike in the case of zero duties, as an EG MRA will also involve beneficiaries meeting certain standards or thresholds (for instance with regard to testing and inspection facilities). This would imply that non-EGA members would need to engage in negotiations or discussions with EGA members in order to avail of any MRA benefits. An MRA, being a two-way relationship, would also imply that non-EGA members could possibly extend benefits to EGA members as well. This is not the case with tariffs where no prior engagement in negotiations may be necessary for non-EGA members to benefit once tariff negotiations are concluded and the EGA is operationalised.

Another procedural aspect for negotiators to consider might be how a possible MRA should be integrated as part of a broader outcome on non-tariff measures in environmental goods. One option would be a stand-alone annex that could be made part of a broader agreement on EG NTMs. The advantage of a stand-alone Annex might be that it provides flexibility for EGA (and possibly additional non-EGA) members to sign up to the MRA in a phase manner when they deem themselves ready without necessarily acceding to other sections of an outcome on NTMs.

Relevant Proposals put Forward in the Context of Information Technology Products

In addition to the negotiations on expanding the ITA, the EGA process could also draw lessons from discussions addressing non-tariff measures on IT products. Indeed, there is also an overlap among the number of products listed in the ITA and the 54 HS sub-headings listed in the APEC environmental goods agreement.

A WTO workshop on non-tariff barriers affecting information technology products and communication (organised on 7 May 2015) revealed lack of standards harmonisation. This required multiple testing and accreditation procedures that created many barriers to trade in ICT products and raised the costs of compliance. Specific conformity assessment-related measures mentioned that led to increased costs in ICT products were: the creation of a national version of the global standard; mandatory local certification by a government/regulatory agency or a designated local certification agency approved by the regulator; a necessity to conduct tests locally; and localisation of test reports. Some ways in which costs and impediments could be avoided according to a representative of the company Nokia were: to ensure that technical specifications were in accordance with international standards and allowed for updates; to accept test results made by international labs fulfilling ISO/IEC 17025[53] to

avoid repetitive testing (mostly against the same standard); and to ensure transparency and a transition period in cases of changes in standards and regulation. The representative recommended settling for the most up-to-date international standard and accepting the product for multiple markets when once tested against it.[54]

An interesting proposal made in the context of transparency by the representative of Electrosuisse, an accredited and internationally recognised test laboratory, was the need for a system to match products with regulations. Further, the HS codes and descriptions (beyond the six digit level) for many products were not precise.

A number of interesting proposals were made in the context of the ICT NTBs workshop that could also be relevant from the perspective of environmental goods. These include:

(i) **To promote transparency** by establishing a centralised database of administrative requirements, such as conformity assessment procedures and technical requirements (e.g., standards) per area of certification (e.g., EMC, safety, environment, etc.), per product, and per country.

(ii) **To streamline conformity assessment procedures.** In areas like electromagnetic compatibility, there could be global recognition of the Supplier's Declaration of Conformity (SDoCs) to avoid the duplication of conformity assessment procedures. In areas such as safety of electrical and electronic components, the IECEE-CB could be considered as a basis to define a globally recognised standard with respect to test results.

(iii) **To deal with the proliferation of marking requirements** to adopt the principle of e-labelling as a simple and efficient solution.

(iv) **Harmonising practices** in the field of energy-efficiency requirements would also serve to facilitate trade in energy-efficient goods.

Some of the measures proposed in the IT sector (such as harmonisation of energy-efficient requirements) might fall outside the ambit of trade negotiations, but others (such as acceptance of SDoCs in certain areas and relying on IEC norms and standards as a "single-step" benchmark) could certainly be considered for EGs as well.

CONCLUSION

This paper has tried to make a case for an MRA on testing, inspection, and conformity-assessment specifically on environmental goods. Such an MRA could be negotiated as part of a future phase of plurilateral EGA negotiations focussing on non-tariff measures once the tariff elimination phase ends.

The paper has highlighted the steps as well as difficulties involved in the conformity assessment process and the role that CA plays as a non-tariff measure. While there exists a large number of private-sector as well as bilateral and plurilateral MRAs, most of these are sector-specific. As a result, not all relevant environmental technologies, many of which are also rapidly evolving (such as charging infrastructure for electrical cars), may be captured by these agreements.

It has been outside the scope of this paper to demonstrate the full range of environmental goods that actually run into conformity assessment related obstacles (requiring additional extensive research and consultations with the private sector) beyond anecdotal examples. Even with the obvious risk of some degree of duplication, a standalone MRA for environmental technologies will underscore the importance of a sector that plays a critical role in addressing environmental challenges globally (not least that of climate-change). It will also serve as an impetus for greater engagement on environmental goods on the part of countries, even those that are presently not part of the EGA. All these countries stand to benefit from the enhanced access to environmental goods export markets an EGA MRA would bring over and above tariff liberalisation gains.

Table A.1: Select Bilateral and Regional MRAs on Conformity Assessment.

Name of MRA and Conclusion Date	Participating Countries or other Entities	Sectors Covered	Basis for Conformity Assessment Procedures	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
EU-China MRA-2014	European Union and China	Offers simplified customs procedures to Authorised Economic Operators proven to be safe, reliable, and compliant with security standards. Thus end-to-end supply chain security is strengthened.	Technical Regulations	Domestic Legislation	No
EU-Australia MRA -OJ L 229 of 17 Aug 1998 And -OJ L 359 of 29 Dec 2012	European Union and Australia	1. Automotive Products 2. Electro Magnetic Compatibility (EMC) 3. Low Voltage Equipment 4. Machinery 5. Medical Devices 6. Pressure Equipment 7. Telecommunications and Terminal Equipment (TTE) 8. Good Manufacturing Practices (GMP)	Technical Regulations	Binding	No
EU-New Zealand MRA -OJ L 229 of 17 Aug 1998 and -OJ L 356 of 22 Dec 2012	European Union and New Zealand	1. EMC 2. Low Voltage Equipment 3. Machinery 4. Medical Devices 5. Pressure Equipment 6. TTE 7. GMP	Technical Regulations		No

Table A.1: *Continued*

Name of MRA and Conclusion Date	Participating Countries or other Entities	Sectors Covered	Basis for Conformity Assessment Procedures	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
Canada-EU MRA 16 Oct 1998	Canada and European Union	1. Good Manufacturing Practices for Pharmaceuticals 2. Medical Devices 3. Telecommunications Terminal Equipment, Information Technology Equipment and Radio Transmitters 4. Electrical Safety 5. Electro Magnetic Compatibility 6. Recreational Craft	Technical Regulations	Binding	No
EU-US MRA 4 Feb 1999	European Union and Australia	1. Telecommunication Equipment 2. Electro Magnetic Compatibility (EMC) 3. Electrical Safety 4. Recreational Craft 5. Pharmaceutical Good Manufacturing Practices (GMP) 6. Medical Devices	Technical Regulations	Binding	No, but based on similar underlying regulations
EU-Israel OJL 263 9 Oct 1999 Agreement on Mutual Recognition of OECD Principles of Good Laboratory Practice (GLP) and Compliance Monitoring Programmes	EU and Israel	Principles of Good Laboratory Practice (GLP) and Compliance Monitoring Programmes	OECD Principles of Good Laboratory Practice (GLP) and Compliance Monitoring Program-mes	Binding	No

Table A.1: *Continued*

Name of MRA and Conclusion Date	Participating Countries or other Entities	Sectors Covered	Basis for Conformity Assessment Procedures	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
EU-Israel OJL 1/1 -4 Jan 2013 on Conformity Assessment and Acceptance of Industrial Products (CAA)	EU and Israel	1. Medicinal Products 2. Active Pharmaceutical Ingredients 3. Pharmaceutical Excipients or Mixtures thereof, for Human or Veterinary Use	Based on Technical Regulations	Binding	No
APEC Mutual Recognition Arrange-ment for Conformity Assessment of Telecom-munications Equipment - May 8, 1998	APEC Member Economies	All equipment subject to telecommunication regulations, including wireline and wireless, terrestrial, and satellite equipment. For such equipment, the MRA covers Electro Magnetic Compatibility (EMC) and electrical safety aspects as well as purely telecommunications aspects of the conformity assessment requirements.	Based on Technical Regulations	Voluntary	No
EU-Japan MRA, OJ L 284 of 29 October 2001	EU and Japan	1. Telecommunications Terminal Equipment and Radio Equipment 2. Electrical Products and Electro Magnetic Compatibility 3. Good Laboratory Practice (GLP) for Chemicals 4. Good Manufacturing Practice (GMP) for Medicinal Products	Based on Technical Regulations	Binding	No

Table A.1: *Continued*

Name of MRA and Conclusion Date	Participating Countries or other Entities	Sectors Covered	Basis for Conformity Assessment Procedures	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
EU-Switzerland, OJL 114, 30 April 2002	EU and Switzerland	1. Machinery 2. Personal Protective Equipment 3. Toys 4. Medical Devices 5. Gas Appliances and Boilers (hot water boilers) 6. Pressure Vessels 7. Radio Equipment and Telecommunication Terminal Equipment 8. Equipment and Protective Systems intended for use in potentially explosive atmospheres 9. Electrical Equipment 10. Construction Plant and Equipment 11. Measuring Instruments and Prepackages 12. Motor Vehicles 13. Agricultural and Forestry Tractors 14. Good Laboratory Practice - GLP 15. Medicinal Products, Good Manufacturing Practice (GMP), Inspection Batch and Certification 16. Construction Products 17. Lifts 18. Biocidal Products 19. Cableways 20. Explosives for Civil Use	Based on Technical Regulations	Binding	Yes

Table A.1: *Continued*

Name of MRA/ Conclusion Date	Countries/ Entities Participating	Sectors Covered	Nature of Conformity Procedures Covered	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
Agreement on Mutual Recognition in Relation to Conformity Assessment between Canada and Switzerland – 3 December 1998	Canada, Switzerland	1. Medicinal Products 2. Medical Devices 3. Telecommunications Terminal Equipment 4. Information Technology Equipment 5. Radio Equipment 6. Electro Magnetic Compatibility (EMC) 7. Electrical Safety and Recreational Craft	Based on Legislation and Regulations	Binding	No
Inter-American (CITEL) MRA – November 1999	Organisation of American States Inter-American	Telecommunications Equipment	Technical Regulations listed by each party under Annex 1	Voluntary	No
Canada-Mexico MRA on Conformity Assessment for Telecommunications Equipment – 13 November 2011	Canada, Mexico	Telecommunications Equipment	Technical Regulations	Mandatory	No
Canada- Israel MRA for Conformity Assessment of Telecommunications Equipment – 18 January 2013	Canada, Israel	Telecommunications Equipment	Technical Regulations	Mandatory	No

Table A.1: *Continued*

Name of MRA/ Conclusion Date	Countries/ Entities Participating	Sectors Covered	Nature of Conformity Procedures Covered	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
MRA on Conformity Assessment in Relation to Medicines Good Manufacturing Practice Inspection and Certification Between the Government of Canada and the Government of Australia – 16 March 2005	Canada, Australia	1. Human Pharmaceuticals 2. Human Biologicals 3. Human Radiopharmaceuticals	Good Manufacturing Practice (GMP) Compliance Certification of Australia and Canada	Mandatory	No
Trans-Tasman MRA – July 1996	Australia, New Zealand	1. Electro Magnetic Compatibility (EMC) 2. Radio-Communications Equipment (RC)	Based on harmonised mandatory standards in Australia and New Zealand	Mandatory	Yes
China-New Zealand MRA	New Zealand and China	1. Electrical and Electronic Equipment and Components 2. Electric Motor Soft Starters 3. Audio Products (including high end niche market audio amplifiers)	Technical Regulations	Mandatory	No
U.S. – Japan MRA – November 2012	U.S., Japan	1. Telecommunications Terminal Equipment 2. Radio Equipment	Technical Regulations	Mandatory	No

Table A.1: *Continued*

Name of MRA/ Conclusion Date	Countries/ Entities Participating	Sectors Covered	Nature of Conformity Procedures Covered	Nature of MRA Obligations	Equivalence of Standards/ Technical Regulations Presumed in Agreement?
US – Israel MRA – 15 October 2012	U.S., Israel	Telecommunications Technical Standards and Equipment	Technical Regulations listed by parties in Annex 1	Mandatory	No
U.S. – Mexico MRA – May 2011	U.S., Mexico	Telecommunications Equipment	Technical Regulations	Mandatory	Yes

Sources:

1. http://ec.europa.eu/growth/single-market/goods/international-aspects/mutual-recognition-agreements/index_en.htm
2. http://ec.europa.eu/growth/tools-databases/nando/index.cfm?fuseaction=mra.main
3. http://www.apec.org/~/media/Files/Groups/TEL/MRA/mra%20guide%20for%20manufacturers.pdf
4. http://www.ic.gc.ca/eic/site/mra-arm.nsf/eng/h_nj00026.html
5. http://www.treaty-accord.gc.ca/text-texte.aspx?id=105023
6. http://acma.gov.au/Industry/Suppliers/Supplier-resources/Mutual-Recognition-Agreements/mutual-recognition-arrangements-equipment-regulation-i-acma
7. http://gsi.nist.gov/global/index.cfm/L1-4/L2-16

Table A.2: Signatories to the ILAC Mutual Recognition Arrangement

No.	Accreditation Body	Economy		Scope	Original Signing Date
1	Organismo Argentino de Acreditacion (OAA)	Argentina	1	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	11 Aug 2005 11 Aug 2005 26 Oct 2013
2	National Association of Testing Authorities, Australia (NATA)	Australia	2	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
3	Joint Accreditation System of Australia and New Zealand (JAS-ANZ)	Australia/ New Zealand	2	Inspection IOS/IEC 17020	07 Nov 2012
4	Akkreditierung Austria	Austria	3	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	22 Sept 2002 22 Sept 2002 24 Oct 2012
5	Bangladesh Accreditation Board (BAB)	Bangladesh	4	Testing ISO/IEC 17025	9 Mar 2015
6	(c) (p) Belgian Accreditation Structure (BELAC)	Belgium	5	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	01 Aug 2006 01 Aug 2006 29 Mar 2013
7	Institute for Accreditation of Bosnia and Herzegovina (BATA)	Bosnia and Herzegovina	6	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	21 Nov 2012 21 Nov 2012 21 Nov 2012
8	(f) Coordenaçã Geral de Acreditação General Coordination for Accreditation (CGCRE)	Brazil	7	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 27 Feb 2013
9	(r) Canadian Association for Laboratory Accreditation Inc. (CALA)	Canada	8	Testing ISO/IEC 17025	17 Nov 2005
10	Institute for Quality Management in Healthcare (IQMH)	Canada	8	Testing ISO 15189	05 Dec 2012
11	Standards Council of Canada (SCC)	Canada	8	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025	02 Nov 2000 02 Nov 2000
12	Instituto Nacional de Normalización (INN)	Chile	9	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025	08 Oct 2010 08 Oct 2010
13	(b) (o) China National Accreditation Service for Conformity Assessment (CNAS)	People's Republic of China	10	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
14	Hong Kong Accreditation Service (HKAS)	China, Hong Kong	11	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
15	Organismo Nacional de Acreditación de Colombia (ONAC)	Colombia	12	Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	7 April 2014 7 April 2014
16	Ente Costarricense de Acreditación (ECA)	Costa Rica	13	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	16 Jan 2007 22 Mar 2010 24 Oct 2012
17	Croatian Accreditation Agency (HAA)	Croatia	14	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	29 Apr 2010 29 Apr 2010 24 Oct 2012
18	National Accreditation Body of Republica de Cuba (ONARC)	Cuba	15	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	17 Sept 2005 17 Sept 2005
19	Cyprus Organisation for the Promotion of Quality (CYS) Cyprus Accreditation Body (CYSAB)	Cyprus	16	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	18 Oct 2011 27 Feb 2013 7 Aug 2014
20	Czech Accreditation Institute (CAI)	Czech Republic	17	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
21	Danish Accreditation (DANAK)	Denmark	18	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
22	Servicio de Acreditación Ecuatoriano (SAE)	Ecuador	19	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	03 Dec 2011 03 Dec 2011 24 Oct 2012
23	(x) Egyptian Accreditation Council (EGAC)	Egypt	20	Testing ISO/IEC 17025 ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	10 Oct 2009 02 Apr 2014 10 Oct 2009 02 Apr 2014
24	Organismo Salvadoreno de Acreditation (OSA)	El Salvador	21	Testing ISO/IEC 17025	19 Dec 2014

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
25	(g) Finish Accreditation Service (FINAS)	Finland	22	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
26	Comite Francais d'Accreditation (COFRAC)	France	23	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
27	(w) Deutsche Akkreditierungsstelle GmbH (DakkS)	Germany	24	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
28	(j) Hellenic Accreditation System S.A. (ESYD)	Greece	25	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	22 May 2004 22 May 2004 30 Nov 2012
29	Oficina Guatemalteca de Acreditación (OGA)	Guatemala	26	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	26 June 2008 14 Mar 2012 02 Apr 2013
30	Hungarian Accreditation Board (NAT)	Hungary	27	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	28 Apr 2010 28 Apr 2010 24 Oct 2012
31	National Accreditation Board for Testing and Calibration Laboratories (NABL)	India	27	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025	02 Nov 2000 02 Nov 2000
32	National Accreditation Board for Certification Bodies (NABCB)	India	27	Inspection ISO/IEC 17020	16 Sept 2013
33	National Accreditation Body of Indonesia (KAN)	Indonesia	29	Testing ISO/IEC 17025 Testing ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	20 June 2001 14 Mar 2013 30 Dec 2003 24 Oct 2012
34	(h) Irish National Accreditation Board (INAB)	Ireland	30	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
35	Israel Laboratory Accreditation Authority (ISRAC)	Israel	31	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	03 Nov 2001 03 Nov 2001 24 Oct 2012
36	(l) L'Ente Italiano di Accreditamento (ACCREDIA)	Italy	32	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 07 Oct 2010 07 Nov 2012
37	Jamaica National Agency for Accreditation (JANAAC)	Jamaica	33	Testing ISO/IEC 17025	31 Aug 2013
38	(a) International Accreditation Japan (IAJapan)	Japan	34	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	02 Nov 2000 02 Nov 2000
39	Japan Accreditation Board (JAB)	Japan	34	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 28 July 2003 24 Oct 2012
40	Japan Accreditation Board (JAB)	Japan	34	Testing ISO/IEC 17025	16 Jan 2007
41	National Centre of Accreditation (NCA)	Kazakhstan	35	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	27 Oct 2010 27 Oct 2010
42	Korea Laboratory Accreditation Scheme (KOLAS)	Republic of Korea	36	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	02 Nov 2000 20 June 2001
43	The Kyrgyz Center of Accreditation (KCA)	The Kyrgyz Republic	37	Testing ISO/IEC 17025	23 Oct 2013
44	Office Luxembourgeois d'Accréditation et de Surveillance (OLAS)	Luxembourg	38	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	14 Apr 2011 19 Apr 2012 24 Oct 2012
45	Department of Standards Malaysia (Standards Malaysia)	Malaysia	39	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025	16 Jan 2003 19 Nov 2003
46	entidad mexicana de acreditación a.c. (ema)	Mexico	40	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	17 Nov 2005 17 Nov 2005 24 Oct 2012
47	Mongolian Agency for Standardization and Metrology, Accreditation Department (MNAS)	Mongolia	41	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	07 June 2012 07 June 2012

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
48	Dutch Accreditation Council (RvA)	The Netherlands	42	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
49	International Accreditation New Zealand (IANZ)	New Zealand	43	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
50	National Accreditation Office (ONA)	Nicaragua	44	Testing ISO/IEC 17025	14 Jan 2015
51	(k) Norsk Akkreditering (NA)	Norway	45	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
52	Pakistan National Accreditation Council (PNAC)	Pakistan	46	Testing ISO/IEC Calibration ISO/IEC 17025	21 May 2009 21 May 2009
53	Papua New Guinea Laboratory Accreditation Scheme (PNGLAS)	Papua New Guinea	47	Testing ISO/IEC 17025	12 May 2010
54	Organismo Nacional de Acreditation (ONA)	Paraguay	48	Testing ISO/IEC 17025	27 April 2012
55	National Institute for the Defense of Competition and Protection of Intellectual Property – National Accreditation Service (INDECOPI-SNA)	Peru	49	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	15 April 2013
56	(q) Philippine Accreditation Bureau (PAB)	Philippines	50	Testing ISO/IEC 17025	23 Oct 2013
57	Polish Centre for Accreditation (PCA)	Poland	51	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	14 Apr 2011 19 Apr 2012 24 Oct 2012
58	Instituto Portugues de Acreditacao (IPAC)	Portugal	52	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	10 May 2006 10 May 2006 24 Oct 2012
59	Romanian Accreditation Association (RENAR)	Romania	53	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	22 May 2004 28 May 2009 28 Nov 2013
60	Association of Analytical Centers “Analitica” (AAC “Analitica”)	Russian Federation	54	Testing ISO/IEC 17025	21 May 2009

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
61	Accreditation Body of Serbia (ATS)	Serbia	55	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	24 May 2012 24 May 2012 24 Oct 2012
62	Singapore Accreditation Council (SAC)	Singapore	56	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
63	Slovak National Accreditation Service (SNAS)	Slovakia	57	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	11 June 2001 11 June 2001 24 Oct 2012
64	Slovenian Accreditation (SA)	Slovenia	58	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	28 Nov 2003 28 Nov 2003 24 Oct 2012
65	South African National Accreditation System (SANAS)	South Africa	59	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
66	Entidad Nacional de Accreditation (ENAC)	Spain	60	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
67	Sri Lanka Accreditation Board for Conformity Assessment (SLAB)	Sri Lanka	61	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025	09 Dec 2009 08 June 2012
68	Swedish Board for Accreditation and Conformity Assessment (SWEDAC)	Sweden	62	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
69	Swiss Accreditation Services (SAS)	Switzerland	63	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025	02 Nov 2000 02 Nov 2000
70	(d) Taiwan Accreditation Foundation (TAF)	Chinese Taipei	64	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
71	Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Science and Technology (BLA-DSS)	Thailand	65	Testing ISO/IEC 17025	23 Aug 2006

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
72	(m) The Bureau of Laboratory Quality Standards, Department of Medical Sciences, Ministry of Public Health, Thailand (BLQS-DMSs)	Thailand	65	Testing ISO/IEC 17025 & ISO 15189	04 April 2003
73	(i) (t) (y) National Standardization Council of Thailand – Office of the National Standardization Council (NSC – ONSC)	Thailand	65	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	03 Nov 2001 03 Nov 2001 24 Oct 2012
74	The Accreditation Institute of the former Yugoslav Republic of Macedonia (IARM)	The former Yugoslav Republic of Macedonia	66	Testing ISO/IEC 17025 Testing ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	19 Apr 2012 6 May 2015 19 Apr 2012 24 Oct 2012
75	Tunisian Accreditation Council (TUNAC)	Tunisia	67	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Apr 2008 02 Apr 2008 06 Oct 2014
76	Turkish Accreditation Agency (TURKAK)	Turkey	68	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	10 May 2006 10 May 2006 24 Oct 2012
77	National Accreditation Agency of Ukraine (NAAU)	Ukraine	59	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	24 Sept 2014 24 Sept 2014 11 Dec 2014
78	Dubai Accreditation Department (DAC)	United Arab Emirates)	70	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	18 Oct 2009 18 Oct 2009 24 Oct 2012
79	United Kingdom Accreditation Service (UKAS)	United Kingdom	71	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
80	American Association for Laboratory Accreditation (A2LA)	USA	72	Testing ISO/IEC 17025 & ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 02 Nov 2000 24 Oct 2012
81	(s) ANSI-ASQ National Accreditation Board (ANAB)	USA	72	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	14 Sept 2006 14 Sept 2006 05 Dec 2012

Table A.2: *Continued*

No.	Accreditation Body	Economy		Scope	Original Signing Date
82	AIHA Laboratory Accreditation Program, LLC (AIHA-LAP, LLC)	USA	72	Testing ISO/IEC 17025	22 Aug 2010
83	American Society of Crime Laboratory Directions/Laboratory Accreditation Board (ASCLD/LAB)	USA	72	Testing ISO/IEC 17025	07 Apr 2009
84	(c) International Accreditation Service, Inc (IAS)	USA	72	Testing ISO/IEC 17025 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 09 May 2005 05 Nov 2012
85	Accreditation Services Bureau (A-S-B) dba Laboratory Accreditation Bureau (L-A-B)	USA	72	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	06 Dec 2007 06 Dec 2007
86	National Voluntary Laboratory Accreditation Program (NVLAP)	USA	72	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	02 Nov 2000 02 Nov 2000
87	Perry Johnson Laboratory Accreditation, Inc. (PJLA)	USA	72	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	06 June 2008 21 May 2009
88	Organismo Uruguayo De Acreditación (OUA)	Uruguay	73	Testing ISO/IEC 17025 Calibration ISO/IEC 17025	22 Oct 2010 9 April 2015
89	(n) Bureau of Accreditation (BoA)	Vietnam	74	Testing ISO/IEC 17025 Testing ISO 15189 Calibration ISO/IEC 17025 Inspection ISO/IEC 17020	02 Nov 2000 05 Dec 2012 02 Nov 2000 24 Oct 2012

(a) IAJapan was formed from a restructure of JCSS and JNLA on 1 April 2002.

(b) CNAL was founded from restructure of CCIBLAC and CNACL on 20 Feb 2003

(c) IAS was formed from restructure of ICBO on 1 Dec 2002

(d) TAF was formed from a restructure of CNLA on 16 April 2005

(e) BELTEST and BKO/OBE originally signed the MRA

(f) Directoria de Credenciamento e Qualidade/Instituto Nacional de Metrologia, Normalizacao e Qualidade Industrial (INMETRO) originally signed the MRA

(g) FINAS, Finnish Accreditation Service Centre for Metrology and Accreditation originally signed the MRA. Their name changed to Finnish Accreditation Service (FINAS)

(h) The Irish National Accreditation Board (NAB), originally signed the MRA. NAB changed their name to Irish National Accreditation Board (INAB)

(i) Thai Laboratory Accreditation Scheme (TLAS) originally signed the MRA. TLAS changed their name to TISI

Table A.2: *Continued*

(j) Hellenic Accreditation Council originally signed the MRA. Hellenic Accreditation Council changed their name to Hellenic Accreditation System S.A. (ESYD)

(k) Norwegian Accreditation originally signed the MRA. Norwegian Accreditation changed their name to Norsk Akkreditering (NA)

(l) Sistema Nazionale per l'Accreditamento originaly signed the MRA. Sistema Nazionale per l'Accreditamento changed their name to Sistema Nazionale per l'Accreditamento di Laboratori (SINAL).

ACCREDIA was formed as a result of the incorporation of SINAL and SINCERT and was accepted as signatory to the EA MLA on 29 May 2009 for testing only.

SIT (original signing date – 9 April 2003 for calibration only) was incorporated into COPA. EA MLA signatory status was transferred to COPA on November 2009.

Signatory status of COPA to the ILAC MRA was withdrawn effective 21 May 2010 as a result of the termination of COPA's membership in EA as per EA Resolution 2010 (25)3.

ACCREDIA assumed the responsibilities for the accreditation of calibration laboratories in Italy from July 2010 as COPA was no longer operational. ACCREDIA was accepted as a signatory to the EA MLA for calibration on 7 October 2010

(m) Bureau of Laboratory Quality Standards (BLQS) Department of medical Sciences (DMSc) originally signed the MRA. Their bane changed to The Bureau of Laboratory Quality Standards, Department of medical Sciences, Ministry of Public Health, Thailand (BLQS-DMSc)

(n) Vietnam Laboratory Accreditation Scheme (VILAS/STAMEQ) originally signed the MRA. Their name changed to Bureau of Accreditation (BoA)

(o) CNAS was formed from the merger of CNAL and CNAB

(p) BELTEST and BKO/OBE ceased to exist on 1 August 2006

(q) PAO was reinstated as a signatory by the APLAC MRA Council for testing and calibration on 10 December 2008. This follows the suspension as a result of the Resolution of the APLAC MRA Council on 5 2008 whereby the signatory status calibration and testing for PAO was suspended.

(r) Canadian Association for Environmental Analytical Laboratories (CAEAL) originally signed the MRA. CAEAL changed its name to Canadian Association for Laboratory Accreditation Inc. (CALA) on 23 June 2008

(s) Assured Calibration and Laboratory Accreditation Select Services was acquired by ANSI-ASQ National Accreditation Board and are now know as ANSI-ASQ National Accreditation Board doing business as ACLASS as of 18 September 08. As of 1 January 2012, ANSI-ASQ National Accreditation Board acquired Forensic Quality Service (FQS) a signatory to the ILAC MRA for testing since 10 December 2010 and are now known as ANSI-ASQ National Accreditation Board doing business as FQS. As of 30.01.15, ACLASS/FQS moved to the single branded of ANAB.

(t) TLAS changed their name to National Standardization Council of Thailand – Office of the National Accreditation Council on 29 January 2009.

(w) DakkS was formed from merger of DGA and DKD in December 2009.

DGA was formed from merger of Deutsches Akkreditierungssystem Prufwesen (DAP), Deutsche Akkreditierungsstelle (DACH), and Deutsche Akkreditierungsstelle Technik in Trägergemeinschaft für Akkreditierung German Association for Accreditation GmbH (DATech in TGA GmbH).

(x) National Laboratories Accreditation Bureau (NLAB) merged into EGAC as of 28 December 2009.

(y) National Standardization Council of Thailand – Office of the National Accreditation Council (NSC-ONAC) changed their name to National Standartization Council of Thailand – Office of the National Standardization Council (NSC-ONSC) on 27 March 2014.

Source: http://ilac.org/ilac-mra-and-signatories/

Table A.3: Signatories to the IAF Multilateral Recognition Arrangement (MLA)

Accreditation Bodies	
A2LA	American Association for Laboratory Accreditation
AA	Akkreditierung Austria (Accreditation Austria)
ACCREDIA	Italian Accreditation Body
ANAB	American National Standards Institute - American Society for Quality National Accreditation Board LLC
ANSI	American National Standards Institute
ATS	Accreditation Body of Serbia (ATS)
BOA	Bureau of Accreditation (Vietnam)
BELAC	Belgian Accreditation Structure
CAI	Czech Accreditation Institute (Český institut pro akreditaci, o.p.s.)
CGCRE	General Coordination for Accreditation (Brazil)
CNAS	China National Accreditation Service for Conformity Assessment
COFRAC	Comité français d'accréditation (France)
DA	Directorate of Accreditation (Albania)
DAC	Dubai Accreditation Center (United Arab Emirates)
DA	Danish Accreditation
DAK	Kosovo Accreditation Directorate (under the UNSC Resolution 1244/1999)
DAKKS	German Accreditation
DSM	Department of Standards Malaysia
ECA	Costa Rican Accreditation Entity
EMA	Mexican Accreditation Entity, (Entidad Mexicana de Acreditacion)
ENAC	Entidad Nacional de Acreditacion (Spain)
EGAC	Egyptian Accreditation Council
ESYD	Hellenic Accreditation System S.A. (Greece)
FINAS	Finnish Accreditation Service
GAS	Gulf Cooperation Council Accreditation Center
HKAS	Hong Kong Accreditation Service
IAJapan	International Accreditation Japan
IAS	International Accreditation Service (USA)
INAB	Irish National Accreditation Board
INDECOPI	National Institute for the Defense of Competition and Protection of Intellectual Property (Peru)
INN	Instituto Nacional de Normalizacion (Chile)
IPAC	Portuguese Institute for Accreditation
JAB	Japan Accreditation Board
JAS-ANZ	Joint Accreditation System of Australia and New Zealand
JASC	Japan Accreditation System for Product Certification Bodies of JIS Mark
JIPDEC	Information Management Systems Promotion Center Japan

Table A.3: *Continued*

Accreditation Bodies	
KAB	Korea Accreditation Board
KAN	Accreditation Body of Indonesia (Komite Akreditasi Nasional)
KAS	Korea Accreditation System
KENAS	Kenya Accreditation Service
MAURITAS	Mauritius Accreditation Service
NA	Norwegian Accreditation
NACB	National Accreditation Board for Certification Bodies (India)
NACI	National Accreditation Center of Iran
NAT	Hungarian Accreditation Board
NCA	National Center of Accreditation (Kazakhstan)
NSC	National Standardization Council of Thailand
OAA	Organismo Argentino de Acreditacion (Argentina)
OLAS	Luxembourg Office of Accreditation
ONAC	Colombia National Accreditation Body
OUA	Organismo Uruguayo de Acreditacion
PAB	Philippine Accreditation Bureau
PCA	Polish Centre for Accreditation
PNAC	Pakistan National Accreditation Council
RENAR	Romanian Accreditation Association (Asociatia de Acreditare din Romania)
RvA	Dutch Accreditation Council (Raad Voor Accreditatie)
SA	Slovenska Akreditacija (Slovenia)
SAC	Singapore Accreditation Council
SAE	Ecuadorian Accreditation Service (Servicio de Acreditación Ecuatoriano)
SANAS	South African National Accreditation System
SAS	State Secretariat for Economic Affairs (SECO), Swiss Accreditation Service
SCC	Standards Council of Canada
SLAB	Sri Lanka Accreditation Board for Conformity Assessment
SNAS	Slovak National Accreditation Service (Slovakia)
STC-IS	Scientific Technical Centre on Industrial Safety (Russian Federation)
SWEDAC	Swedish Board for Accreditation and Conformity Assessment
TAF	Taiwan Accreditation Foundation (Chinese Taipei)
TUNAC	Tunisian Accreditation Council (Conseil National d'Accreditation, CNA)
TURKAK	Turkish Accreditation Agency
UKAS	United Kingdom Accreditation Service

Table A.3: *Continued*

Accreditation Bodies
Economies Represented
Albania, Argentina, Australia & New Zealand, Austria, Belgium, Brazil, Canada, Chile, China, Chinese Taipei, Colombia, Costa Rica, Czech Republic, Denmark, Dubai (UAE), Ecuador, Egypt, Finland, France, GCC Economies, Germany, Greece, Hong Kong, China, Hungary, India, Indonesia, Iran, Ireland, Italy, Japan, Kazakhstan, Kenya, Korea, Republic of Kosovo, Luxembourg, Malaysia, Mauritius, Mexico, Netherlands, Norway, Pakistan, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Tunisia, Turkey, United Kingdom, United States of America, Uruguay, and Vietnam

Source: International Accreditation Forum, www.iaf.nu.

Box A.1. Relevant Provisions of Article 6.1 of the WTO TBT Agreement

With respect to their central government bodies:

6.1 Without prejudice to the provisions of paragraphs 3 and 4, Members shall ensure, whenever possible, that results of conformity assessment procedures in other Members are accepted, even when those procedures differ from their own, provided they are satisfied that those procedures offer an assurance of conformity with applicable technical regulations or standards equivalent to their own procedures. It is recognised that prior consultations may be necessary in order to arrive at a mutually satisfactory understanding regarding, in particular:

6.1.1 adequate and enduring technical competence of the relevant conformity assessment bodies in the exporting Member, so that confidence in the continued reliability of their conformity assessment results can exist; in this regard, verified compliance, for instance through accreditation, with relevant guides or recommendations issued by international standardising bodies shall be taken into account as an indication of adequate technical competence;

6.1.2 limitation of the acceptance of conformity assessment results to those produced by designated bodies in the exporting Member.

6.2 Members shall ensure that their conformity assessment procedures permit, as far as practicable, the implementation of the provisions in paragraph 1.

6.3 Members are encouraged, at the request of other 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. Members may require that such agreements fulfil the criteria of paragraph 1 and give mutual satisfaction regarding their potential for facilitating trade in the products concerned.

6.4 Members are encouraged to permit participation of conformity assessment bodies located in the territories of other Members in their conformity assessment procedures under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country.

Source: WTO Agreement on Technical Barriers to Trade, https://www.wto.org/english/docs_e/legal_e/17-tbt.pdf

ENDNOTES

1 See for example Vossenaar, R. (2013); *The APEC List of Environmental Goods: An Analysis of the Outcome & Expected Impact;* International Centre for Trade and Sustainable Development, Geneva, Switzerland, www.ictsd.org

2 UNCTAD/DITC/TAB/2009/3

3 UNCTAD (2012), Classification of non-tariff measures, February 2012 version. http://www.tradebarriers.org/docs/UNCTAD%20-%20NTM%20classification%202012%20Version.pdf

4 The World Bank (2007), *International Trade and Climate Change: Trade and Climate Change: Economic, Legal and Institutional Perspectives*

5 WTO, World Trade Report 2012, Trade and public policies: A closer look at non-tariff measures in the 21st century, https://www.wto.org/english/res_e/booksp_e/anrep_e/wtr12-0_e.pdf

6 ISO/IEC Guide 2:1996 referred to in http://www.nema.org/Technical/The-ABCs-of-Conformity-Assessment/Pages/default.aspx

7 WTO-UNEP Report (2009), *Trade and Climate Change*, https://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf

8 ISO, UNIDO; Building Trust: The Conformity Assessment Toolbox, http://www.iso.org/iso/casco_building-trust.pdf

9 WTO-UNEP Report (2009), *Trade and Climate Change*, https://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf

10 Conformity Assessment in New Zealand, www.ianz.govt.nz

11 Conformity Assessment in New Zealand, www.ianz.govt.nz

12 See Asia-Pacific Laboratory Accreditation Cooperation, www.aplac.org

13 Conformity Assessment in New Zealand, www.ianz.govt.nz

14 For instance, despite the high potential risk to safety of automobiles, the motor vehicle industry in the United States is able to use SDoC because of a well-developed U.S. automotive regulatory system, including an effective post-market surveillance system to monitor products' safety and performance after they reach the market. Johnson, C. (2008).

15 European Commission, MRA Newsletter April 2014. *Trade issues-Technical Barriers to Trade-Mutual Recognition Agreements and Agreements on Conformity Assessment and Acceptance of Industrial Products*.p.2

16 Standards and Conformity Assessment in Trade: Minimising Barriers and Maximising Benefits: OECD Workshop and Policy Dialogue, Berlin 21-22 Nov 2005. http://www.oecd.org/trade/ntm/36223999.pdf

17 Johnson, C. (2008).

18 Johnson, Christopher (2008), *Technical Barriers to Trade: Reducing the Impact of Conformity Assessment Measures*, United States International Trade Commission (USITC).

19 "Conformity Assessment in the WTO TBT Agreement," presentation by Laura Locks on behalf of WTO Secretariat at *Workshop on NTBs Affecting Trade in ICT Products* on 7 May 2015. https://www.wto.org/english/tratop_e/inftec_e/workshopmay15_e/workshopmay15_e.htm

20 Since some countries are larger than others, a simple average (i.e., the arithmetic mean) may give undue weight to smaller countries at the expense of larger ones. However, using a trade-weighted average (i.e., taking the value of each country's exports in 2010 as weights) does not appear to have a major impact on shares (WTO, 2012).

21 World Trade Organization Committee on Sanitary and Phytosanitary Measures. Effects of SPS-Related Private Standards - Descriptive Report, 15 June, 2009.G/SPS/GEN/932/Rev.1 https://docsonline.wto.org

22 WTO (2012).

23 For instance, in the ICT sector see "Conformity Assessment: An Industry Perspective," presentation on behalf of ITI by Josh Rosenberg, at Workshop on NTBs Affecting Trade in ICT Products on 7 May 2015. https://www.wto.org/english/tratop_e/inftec_e/workshopmay15_e/workshopmay15_e.htm

24 Standards and Conformity Assessment in Trade: Minimising Barriers and Maximising Benefits: OECD Workshop and Policy Dialogue, Berlin 21-22 Nov 2005. http://www.oecd.org/trade/ntm/36223999.pdf

25 Standards and Conformity Assessment in Trade: Minimising Barriers and Maximising Benefits: OECD Workshop and Policy Dialogue, Berlin 21-22 Nov 2005. http://www.oecd.org/trade/ntm/36223999.pdf

26 Wiel, Stephen, and Laura Van Wie McGrory (2003), Regional Cooperation in Energy Efficiency Standard-Setting and Labeling in North America,Lawrence Berkeley National Laboratory Report. http://eetd.lbl.gov/publications/regional-cooperation-energy-efficiency-standard-setting-and-labeling-north-america

27 Steenblik, Ronald, Scott Vaughan and Paul Waide. 2006. "Can Energy-Efficient Electrical Appliances Be Considered 'Environmental Goods'?" OECD Trade and Environment Working Papers No. 2006-04. http://www.iea.org/publications/freepublications/publication/efficient_appliances.pdf

28 WTO (2012)

29 Ibid

30 WTO Agreement on Technical Barriers to Trade, https://www.wto.org/english/docs_e/legal_e/17-tbt.pdf

31 European Commission, MRA Newsletter April 2014. *Trade issues-Technical Barriers to Trade-Mutual Recognition Agreements and Agreements on Conformity Assessment and Acceptance of Industrial Products*. http://trade.ec.europa.eu/doclib/docs/2012/may/tradoc_149385.pdf, p. 2

32 European Commission: Single Market- Mutual Recognition Agreements. http://ec.europa.eu/growth/single-market/goods/international-aspects/mutual-recognition-agreements/index_en.htm

33 European Commission, MRA Newsletter April 2014. *Trade issues-Technical Barriers to Trade-Mutual Recognition Agreements and Agreements on Conformity Assessment and Acceptance of Industrial Products.*

34 The EU-US MRA signed on 12 Dec 1998 covers sectors of Telecommunications, Electromagnetic Compatibility (EMC), Electrical Safety, Recreational Craft, Medical Devices, and Pharmaceutical Good Manufacturing Practices.

35 European Commission (1998), Implementation of Mutual Recognition Agreements on conformity assessment (MRA) and Protocol on European Conformity Assessment (PECA) Document Certif. 98/7 of 24.07.1998. http://ec.europa.eu/growth/single-market/goods/international-aspects/mutual-recognition-agreements/index_en.htm

36 The APEC Engineer framework arose from an APEC leaders' meeting at Osaka in 1995, where they agreed on the need for facilitating the mobility of qualified persons among the member economies. Consistent with the Osaka Action Agenda, the meeting of 18 member economies of APEC HRD Ministers in Manila in January 1996 supported the acceleration and expansion of project initiatives on the mutual recognition of skill qualifications. An APEC Engineer Manual: *The Identification of Substantial Equivalence* launched in 2000 sets out the methodology for assessing the academic and professional experience of professional engineers against a standard established by the member economies for determining substantial equivalence for professional engineers and is revised and improved on a regular basis. The Manual provides, among others a practical framework to facilitate and improve mobility for professional engineers. The initial operation of authorized APEC Engineers Registers by the eight founding members commenced on 1 November, 2000 and is based on the 2000 APEC Engineer Manual. For details see: APEC (2009), The APEC Engineer Manual: The Identification of Substantial Equivalence. http://www.ieagreements.org/APEC/Documents/APECEngineerManual.pdf

37 The APEC Architect Project is an initiative of the APEC Human Resources Development Working Group (HRDWG), one of a number of sectoral groups established to implement APEC programs. The project was endorsed by the HRDWG at its year 2000 meeting in Brunei as a direct response to the Group's strategic priority of facilitating mobility of qualified persons by developing a means for the mutual recognition of skills and qualifications. Registration as an APEC Architect through an Architect Register provides evidence of the achievement of professional standards that may satisfy some, or all, of the requirements for the recognition of architects by host APEC economies. An APEC Architect Manual sets out the organisational structure of the APEC Architect framework and the rules and criteria that underpin its operation. It is an evolving document reviewed and amended as required. For details see APEC (2014): APEC Architects Operation Manual, http://www.apecarchitects.org/images/pdf/repairs/operations-manual-2014.pdf

38 Such bodies include associations of laboratories, associations of laboratory practitioners, inspection body associations, purchasing organisations, regulatory authorities, consumer associations, and trade organisations. For further details see http://ilac.org/ilac-membership/#associates

39 Benefits of the ILAC & IAF Multilateral Mutual Recognition Arrangements, WTO Submission, G/TBT/GEN/117, 28 June 2011.

40 For a full list of Accreditation Body members and Economies see Annex Table A.3.

41 International Accreditation Forum, www.iaf.nu

42 WTO, *Committee on Technical Barriers to Trade: Minutes of the Meeting of 15-16 JUNE 2011, G/TBT/M/54, 20 Sep 2011, Paras 317-333. https://docs.wto.org*

43 International Accreditation Forum, www.iaf.nu

44 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE), http://www.iecee.org/

45 The joint statement by 14 countries launching the EGA negotiations also emphasises their commitment to "…exploring a broad range of additional products, in the context of a future

oriented agreement able to address other issues in the sector and to respond to changes in technologies in the years to come, that can also directly and positively contribute to green growth and sustainable development," Joint Statement regarding Trade in Environmental Goods 24 January 2014 at Davos, Switzerland. http://trade.ec.europa.eu/doclib/docs/2014/january/tradoc_152095.pdf

46 See for instance Article 11 of the EU-US MRA, http://trade.ec.europa.eu/doclib/docs/2003/october/tradoc_111718.pdf

47 These refer to rules of origin as those laws, regulations, and administrative determinations of general application applied to determine the country of origin of goods except those related to the granting of tariff preferences. Article 1 of the WTO Agreement on Rules of Origin. https://www.wto.org/english/docs_e/legal_e/22-roo_e.htm

48 EU-New Zealand Mutual Recognition Agreement, OJL 229, 17 Aug 1998. http://eur-lex.europa.eu/resource.html?uri=cellar:8d713137-ae56-4ae7-959a-b996daea49cf.0005.02/DOC_1&format=PDF

49 Interviews conducted with manufacturer of energy-efficient motors

50 New Zealand Ministry of Foreign Affairs and Trade, New Zealand-China Free Trade Agreement. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/china-fta/

51 In June 2012, 33 WTO members launched negotiations for the expansion of the product coverage of the ITA to include a number of products which, in light of new technological developments, should be added to the list. Participation in the ITA product expansion negotiations quickly increased to 54 WTO members. After 17 rounds of negotiations, at a meeting on 24 July 2015, nearly all the participants agreed to expand the products covered by the Agreement and eliminate tariffs on an additional list of 201 products. Annual trade in these 201 products is valued at over $1.3 trillion per year and accounts for approximately seven percent of total global trade today. See https://www.wto.org/english/tratop_e/inftec_e/inftec_e.htm. Also see "Trade Negotiators Clinch Tentative Deal to Expand ITA Product List", *ICTSD Bridges Weekly*, 23 July 2015. http://www.ictsd.org/bridges-news/bridges/news/trade-negotiators-clinch-tentative-deal-to-expand-ita-product-list

52 WTO: Information Technology Agreement https://www.wto.org/english/tratop_e/inftec_e/inftec_e.htm

53 ISO 17025:2005 specifies the general requirements for competence to carry out tests or sampling. It covers testing and sampling performed using standard methods, non-standard methods, and laboratory developed methods. It is used by laboratories for managing their systems for quality, administrative, and technical operations. While laboratory customers, regulatory authorities, and accreditation bodies may also use it in confirming or recognising the competence of laboratories, it is not intended to be used as the basis for certification of laboratories. Compliance with regulatory and safety requirements on the operation of laboratories is not covered by ISO 17025:2005. http://www.iso.org/iso/catalogue_detail.htm?csnumber=39883

54 "Elimination of NTBs for the connected world," presentation on behalf of Nokia by Julia Janiska at Workshop *on NTBs Affecting Trade in ICT Products* on 7 May 2015. https://www.wto.org/english/tratop_e/inftec_e/workshopmay15_e/workshopmay15_e.htm

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