

Contributions of quality infrastructure to regional economic integration:

Insights and experiences gained from
Technical Cooperation of PTB

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List of abbreviations

ACCSQ	ASEAN Consultative Committee on Standards and Quality
AFTA	ASEAN Free Trade Area
ACP	Africa, the Caribbean, Pacific States
ASEAN	Association of Southeast Asian Nations
APLAC	Asia Pacific Laboratory Accreditation Cooperation
APMP	Asia Pacific Metrology Programme
BIPM	Bureau International des Poids et Mesures
CIPM	Comité International des Poids et Mesures
COOMET	Euro-Asian Cooperation of National Metrology Institutes
EA	European Cooperation for Accreditation
EAC	East African Community
EPA	Economic Partnership Agreement
EU	European Union
FTA	Free Trade Area
GATT	General Agreement on Tariffs and Trade
IAAC	Inter-American Accreditation Cooperation
IAF	International Accreditation Forum
ILAC	International Laboratory Accreditation Cooperation
ISO	International Organization for Standardization
LDC	Least Developed Country
MLA	Multilateral Recognition Arrangement
MRA	Mutual Recognition Arrangement
NMI	National Metrology Institute
OIML	Organisation International de Métrologie Légale
PAC	Pacific Accreditation Cooperation
QI	Quality Infrastructure
RTA	Regional Trade Agreement
SAARC	South Asian Association for Regional Cooperation
SADC	Southern African Development Community
SADCA	Southern African Development Community Accreditation
SAFTA	South Asian Free Trade Area
SI	International System of Units
SICA	Central American Integration System
SIM	Inter-American Metrology System
TBT	Technical barriers to trade
TC	Technical Committee
UEMOA	Union Economique et Monétaire Ouest Africaine
WTO	World Trade Organization

Introduction

In the past ten years, hardly any phenomenon has influenced the global economic and geo-political situation as much as the process of regional economic integration. Driven by political, economic and security considerations, a wide range of forms of integration involving most developing countries have developed. The *Economic Partnership Agreements* (EPA) negotiated between the European Union and the ACP Nations have accelerated this trend and demonstrate the growing interest in regional integration and cooperation. Accordingly, it ranks high on the agenda of the German Federal Ministry for Economic Cooperation and Development (BMZ), which made EPAs a focal point of the German presidency of the EU Council in 2007.

Irrespective of the form of integration – free trade zone, customs union, common market – a fundamental characteristic of regional economic integration is the elimination of technical barriers to trade. The institutional framework for this is provided by “quality infrastructure” (QI)¹. The harmonization and international compatibility of QI are promoted in all regional communities, however, with various degrees of success. Due to asymmetries between the member states – particularly in integration communities with a high share of developing countries – the isolated promotion of quality infrastructure directed at the individual state level is reaching its limits. Instead, a regional cooperation and division of labor appear preferable. Accordingly, within the scope of Technical Cooperation, regional QI approaches are increasingly being taken into consideration.

The objective of this discussion paper is to illustrate the contributions of quality infrastructure to regional economic integration and to identify potential for regional QI approaches. More specifically, it focuses on the following guiding questions:

1. What meaning does quality infrastructure have for regional integration processes?
2. Which challenges do developing countries and regional communities with a strongly heterogeneous quality infrastructure face?
3. Which areas provide potential for regional approaches to improve quality infrastructure?
4. In which areas can Technical Cooperation support the strengthening of QI capacities within a regional context, and what lessons have been learned in this respect?

Questions 1 and 2 are treated in Part I, which focuses on theoretical aspects, while questions 3 and 4 dominate Part II, which focuses on practical issues. The latter part is supported by case studies by the Technical Cooperation of PTB. The concluding results contain essential lessons learned as well as an outlook on future challenges within the context of regional quality infrastructures.

¹ In accordance with the Sector Concept of BMZ, the term Quality Infrastructure refers to all aspects of metrology, standardization, testing, quality management, certification and accreditation; BMZ (2004a), 5

Part I:

Quality infrastructure and regional economic integration: Fundamental issues and interlinkages

1. Regional economic integration: Definition, forms and relevance to development politics

Generally speaking, regional economic integration is defined as the cooperation of two or more countries in areas of mutual economic relationships or – exceeding that definition – the association of two or more countries in a common economic area (Dieckheuer 2001, 193). Depending on the depth and scope of integration, the economic literature differentiates between various ideal standard forms of integration. The spectrum ranges from preferential trade agreements for certain goods to economic communities with common external tariffs (Customs Union) to a comprehensive harmonization of the economic framework of an Economic Union (Chart 1). In reality, however, regional integration communities are frequently a combination of different prototypes. For example, contingent protection often remains applicable to intra-bloc trade, implying that internal trade is not truly free (Hoekman/Kostecki 2001, 347).

Term	Characteristics	Examples
Preferential Trade Area	Agreement of preferential conditions, such as lower customs duties or higher import quotas for certain goods	Generalized System of Preferences (GPS) as well as "GPS+" System of the European Union
Free Trade Area	Extensive reduction of trade restrictions between the member states, usually covering the overall trade in goods	ASEAN Free Trade Area (AFTA), Southern African Development Community (SADC)
Customs Union	Elimination of internal trade restrictions and introduction of common external tariffs, often in connection with the reduction of additional impediments, such as administrative barriers	Caribbean Community (CARICOM), Central American Common Market (CACM)
Common Market	Expansion of the freedom of movement of goods to the elimination of obstacles in other areas, such as free movement of capital, services and labor	East African Community (EAC) (projected for 2010)
Economic Union	Establishment of a uniform internal market, including the harmonization of national policies and of the economic framework	European Union (EU)

Chart 1: Forms of regional economic integration

The listed forms of integration do not necessarily represent stages in the sense of any linear development process. Instead, each form can be introduced in its own right. Obviously, the level of required coordination and cooperation increases with a progressive depth of integration. The transition from a free trade area to a customs union represents a particularly distinct step: Since the coordination of a common foreign trade policy requires the establishment of institutions, an important new dimension is added, namely that of institutional integration. For that reason, regional integration can only be considered to have reached a deeper level if, apart from the mere liberalization through free trade agreements, a whole range of measures, including institutional aspects, has been included into the process of integration (BMF 2004, 71).

A look at the statistics of the World Trade Organization (WTO) shows that in practice, regional trading schemes are clearly dominated by free trade agreements. Among the 152 Regional Trade Agreements (RTAs) that are currently notified to the WTO and are in force in accordance with GATT Article XXIV within the sector of trade in goods, 139 are defined as Free Trade Agreements (FTA) whereas Customs Unions only account for 13 cases (WTO 2009a). The predominance of FTAs over Customs Unions is probably due to the fact that FTAs are faster to conclude and that they require a lower degree of policy coordination (WTO 2005b, 4). Concerning the objective, the majority of FTAs aims at strategic market access, often unbound by geographical considerations. Correspondingly, there is a high share of bilateral RTAs (over 75%), the number of which has dramatically risen, especially in the 1990s (Figure 1), and which are increasingly being entered into between independent RTAs.

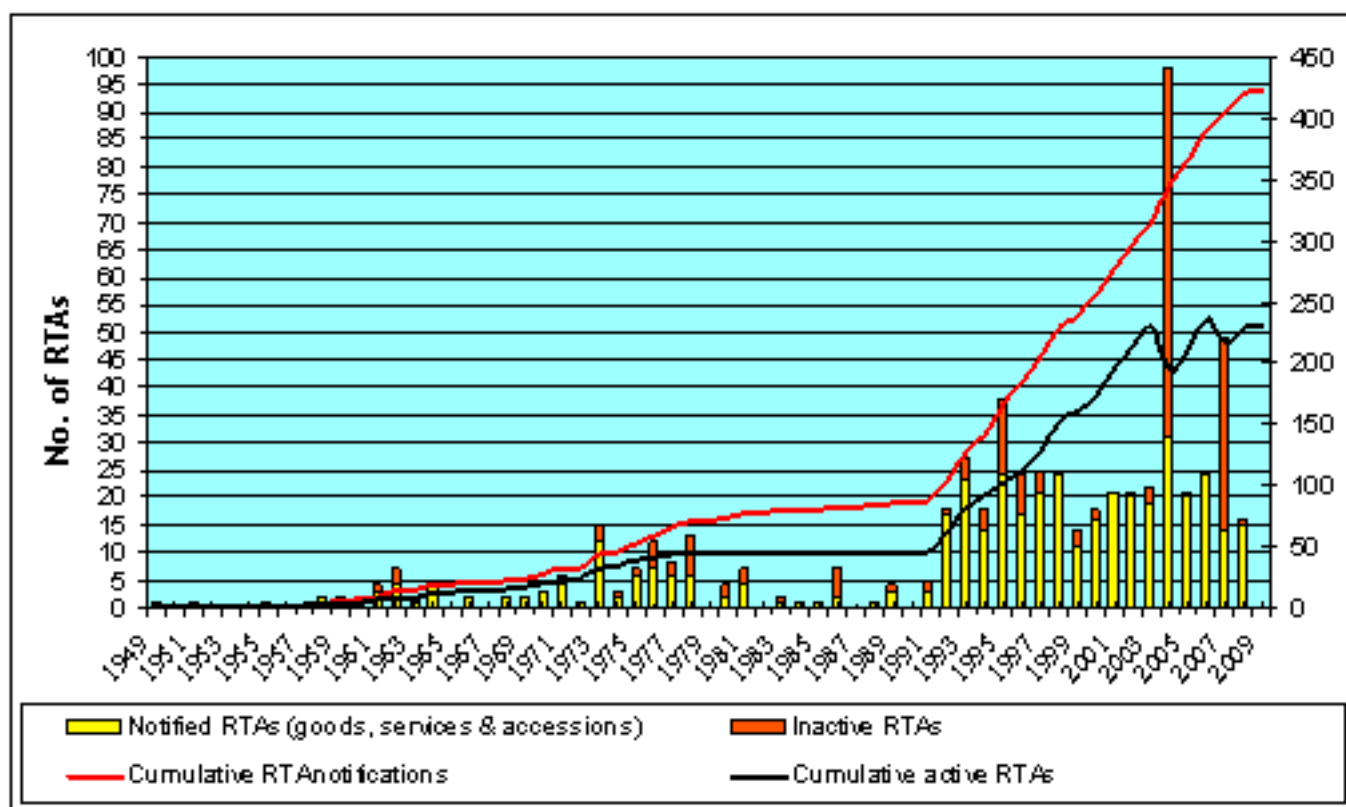


Figure 1: Development of regional trade agreements 1947 – 2007 (status 16.03.2009)

Source: WTO 2009b

Parallel to the increase of bilateral RTAs, there is a tendency to establish and consolidate regional communities that, apart from their trade-related cooperation, are striving for a closer political cooperation by using their geographical proximity and cultural affinity (Figure 2). The European Economic Community, founded in 1957, which meanwhile has become a part of the European Union, is considered to be exemplary. In the 1960s and 1970s, integration agreements followed in Central and South America, such as the Central American Common Market (1961), the Andean Pact (1969) and the CARICOM (1973). In the 1990s, comparable communities developed on the African continent, such as the Southern African Development Community (1992), the East African Community (1999) as well as the Economic Community of Central African States (1999). In Asia, where regional cooperation is mainly supported by transnational corporations and production networks, the degree of formal economic and institutional integration is still relatively low (Sakakibara & Yamakawa 2004, 35-78). The trade agreements notified by the regional communities of ASEAN and SAARC to GATT/WTO in 1992 and in 2008, respectively, merely show the status of free trade areas (AFTA and SAFTA, respectively).

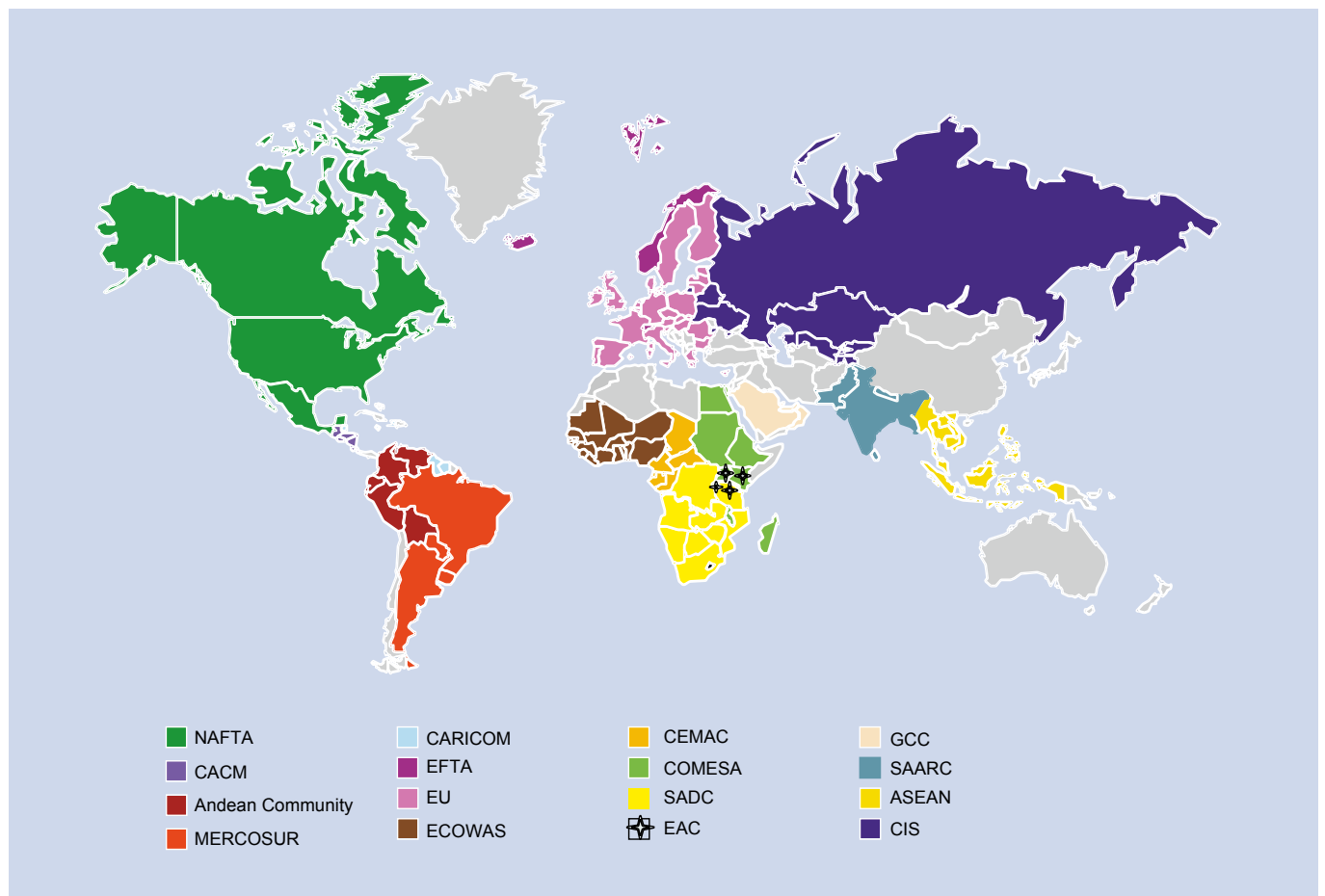


Figure 2: A selection of regional economic communities
 Source: WTO 2005b, 23

When looking into the reasons for the boom of RTAs particularly noticeable in the 1990s, the increase is in part a reflection of the geopolitical developments at the end of the 1980s and the beginning of the 1990s. These include the general insecurity about the progress of global trade liberalization, the reorientation of nations such as the U.S. towards preferential agreements and the domino effect thus created, as well as the fragmentation of the Soviet Union into independent individual states (WTO 2005b, 1f.).

Moreover, the establishment of regional economic communities is influenced by a range of economic, political and security-related considerations which may be summarized as follows (WTO 2005b, 16):

- Exploiting economies of scale and benefits from specialization by expanding the domestic market and developing new markets
- Attracting foreign direct investments, particularly for countries with low labor costs and a preferential access to larger markets
- Enhancing integration processes in areas that are currently only insufficiently covered by multilateral agreements, such as investments, competition, environment or labor standards
- Supporting the negotiating power in multilateral agreements by forming regional blocks and strengthening geopolitical alliances
- Consolidating peace processes and promoting violent-free solutions to conflicts by a regional cooperation on security issues

Though the actual integration successes in developing and transition countries have frequently not been able to meet expectations, regional integration is still considered to be an attractive political option. Particularly developing countries regard regional cooperation as a reliable insurance against sudden changes in their economic partners' trading behavior and therefore as a protection from vulnerability in foreign trade (Jovanovic 1998, 1). The German Federal Government particularly emphasizes the benefits for regional value addition, the increased competitiveness of the local economy as well as the national security function regional cooperation has. Regional integration and cooperation thus claim a central position in the funding instruments of BMZ and its implementing organizations (GTZ 2008). At the same time, it is admitted that processes of integration require a lot of patience and a solution for existing contradictions, such as the phenomenon of multi-memberships in different regional communities found, for example, in Southern Africa (Wieczorek-Zeul 2007, 14-15).

To a similar extent, the development cooperation of the European Union considers that the process of regional (economic) integration is becoming more and more important. That development is driven by the Economic Partnership Agreements (EPAs) entered into by the ACP States and the EU. EPAs pursue a new international approach since they are planned as free trade zones that should be based on regional integration communities among the ACP States. Thus, the negotiating partners of the EU are not individual states but rather six regional integration communities in West Africa (ECOWAS/UEMOA), East Africa (ESA), Central Africa (CEMAC), South Africa (SADC), the Caribbean (CARIFORUM) and the Pacific. Consequently, regional integration is regarded as one of the key issues within each community.

2. Technical barriers to trade and the concept of quality infrastructure

A characteristic feature of any form of regional economic integration and cooperation is the elimination of barriers to trade. They are usually divided into tariff and non-tariff barriers. Against the background of the past global trade rounds of GATT and WTO that resulted in significant tariff reductions, particularly the non-tariff trade barriers are increasingly gaining in importance. In the broader sense, they include all non-duty measures that affect international trade in goods, such as import quotas, rules of origin, trade licences, export subsidies, quality standards or packing requirements. From the point of view of trade policy, it is especially the lack of transparency of non-tariff measures that causes concern since the measures contain the risk of abuse and impede the access to foreign markets. Actually, non-tariff trade barriers contribute more to the fragmentation of markets than tariffs have ever done (Jovanovic 1998, 103).

Major group	Type (examples)
Government involvement in international trade	Subsidies Public procurement State monopoly trading Export rate restrictions Embargoes
Customs and administrative entry procedures	Customs classification Rules of origin Consular formalities Trade licensing Administrative controls
Standards	Technical Health Environment Testing and certification Packaging, labelling, weight
Others	Quotas Local content and equity rules Tax remission rules Variable levies Buy-domestic campaigns

Chart 2: Types of non-tariff barriers to trade

Source: Jovanovic 1998, 104

At the center of trade-related disputes and agreements there are usually standards and product-related specifications, which are commonly referred to as *technical barriers to trade* (TBT). The most substantial and frequent restrictions in that category result from (mandatory) national technical regulations that are not based on international standards. The discrepancy between national and international standards may refer to products as well as to conformity assessments and has far-reaching consequences for international trade since, for instance,

- products, processes and systems are subject to different mandatory requirements and may therefore violate legal regulations of the trading partner,
- testing procedures that assess the conformity of products, processes and systems against defined requirements may not be recognized,
- conformity assessment bodies of the trading partner which cannot prove their competence against agreed standards may not be trusted.

At the same time, it must be noted that there are sound and legitimate reasons for national measures (e.g. for the sake of consumer and environmental protection) and that, in principle, TBT can therefore hardly be avoided. Thus, the WTO Agreement on Technical Barriers to Trade expressly focuses on avoiding *unnecessary* TBT (WTO 1995). In particular, it recommends to WTO members the use of international standards as much as possible and to actively participate in the activities of standard-setting bodies, such as the *International Organization for Standardization* (ISO) and the *International Electrotechnical Commission* (IEC). Developing countries are granted a special status insofar as their development needs and their financial resources shall be taken into consideration when the provisions of the TBT Agreement are implemented. De facto, however, producers from developing countries are likely to be subjected to the same rules and product specifications as their trade partners in industrialized and transition economies, in view of the existence of global supply networks and value chains.

Quality infrastructure (QI) provides the conceptual framework for the definition and implementation of technical rules and regulations. As the name indicates, this term covers all elements that are required to assure and demonstrate quality, including state and private sector institutions and the regulatory framework within which they operate (BMZ 2004a, 5). These elements include

- metrology as the science of correct and reliable measurement, commonly subdivided into the fields of scientific metrology (maintenance and dissemination of measurement units), industrial metrology (calibrations for industry) and legal metrology (verification of measuring instruments subject to mandatory control);
- standardization, defined as being the planned unification of material and immaterial objects carried out by the interested parties for the benefit of the public; its results can be found in practically any area of life and business;
- testing, that is to show to what extent safety regulations and standards are actually being met and which has a wide scope ranging from a simple visual test to tests under special laboratory conditions;
- quality management, consisting of coordinated activities to direct and control an organization with regard to quality (DIN 2005, 21), the importance of which is mainly emphasized by the growing number of ISO 9000 certificates;
- certification, which documents that a product, process, system or person fulfils set requirements and which, together with the field of testing, can be subsumed under the term of conformity assessment;
- accreditation, with which an independent third party acknowledges that a body is competent to carry out certain conformity assessment activities, thus representing an essential instrument that builds trust in the results of conformity assessment bodies.

Decisive factors for the actual functioning of a quality infrastructure are a well-balanced development and interconnection of its elements as well as the international recognition of the system. For instance, product certification is based on the results of testing laboratories whose instruments must be checked by calibration laboratories in order to receive the accreditation required for international recognition. International recognition, in turn, is based on the linking of individual QI elements to the standards and guidelines agreed on at the regional and the international level. Figure 3 is a simplified illustration of the linking of QI elements on a national level and their function to render relevant services for selected value chains while taking international requirements into consideration.

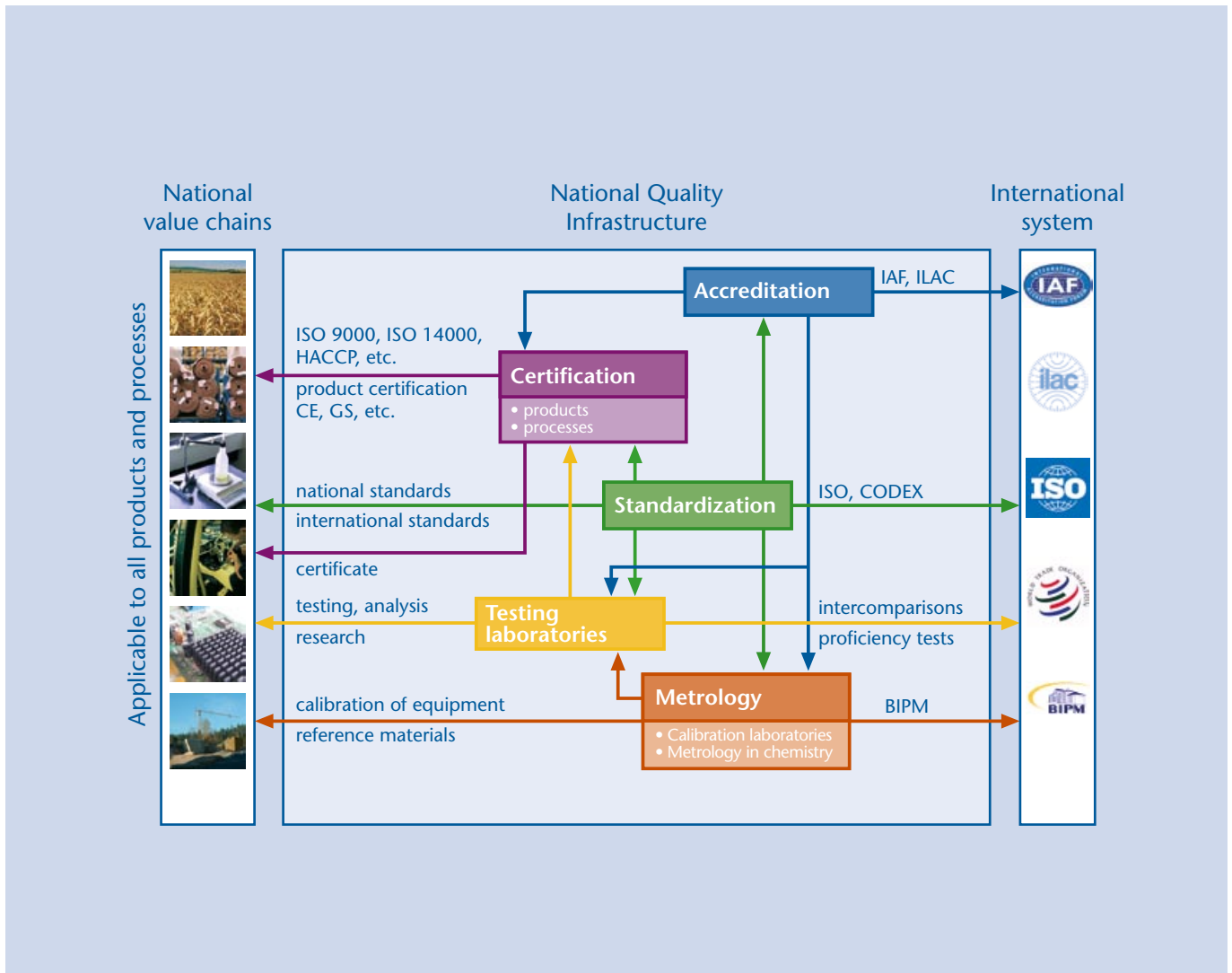


Figure 3: Components of a national quality infrastructure
 Source: Sanetra & Marbán 2007,107

It must be emphasized that standards are generally based on the principle of voluntariness. However, they also may be rendered compulsory – in the form of technical regulations – by legislation. This particularly applies to product areas that may be hazardous to the consumers’ safety and health. Thus, standardization and quality infrastructure, on the whole, always have a political-regulatory aspect in addition to their technical dimension and therefore are directly related to issues on good governance². As compared to standards, technical regulations set up by law will therefore usually pose the real challenge contained in trade agreements, since the harmonization or recognition of those regulations mean to interfere with national regulatory policies.

² On the contribution of quality infrastructure to Good Governance, see Grote (2006) and PTB (2006)

3. Contributions of quality infrastructure to regional economic integration

Due to the relevance of standards and of quality for free trade, the issue of quality infrastructure has always been a central part of regional trade agreements.³ Usually, measures for the harmonization and recognition of conformity assessments are determined in regional action plans, such as the SAARC *Regional Action Plan on Standards, Quality Control and Measurement*.⁴ Moreover, issues on technical assistance within the QI sector play a central role in the work of the Regional Preparatory Task Forces where development cooperation of the EU is coordinated within the context of the Economic Partnership Agreements. Yet, even in “simple” and non-formalized forms of regional cooperation - for example concerning transnational value chains - aspects of meeting and controlling quality standards play an important part.

However, the relevance of quality infrastructure is not restricted to trade but also includes other sectors with a high degree of standardization and quality control activities, such as environment, health and consumer protection. Thus, the importance of quality infrastructure and the demands made on its effectiveness grow with the degree of integration: Whereas in relatively flat forms of regional integration, such as the conclusion of preferential trade agreements, the overcoming of barriers to trade in selected sectors is more prominent (negative integration), more profound forms of integration, such as the establishment of a common market, thrive for extensive harmonization in nearly all industrial sectors and for the creation of a uniform socio-economic framework (positive integration).

The contributions of quality infrastructure to the process of regional economic integration thus depend on the selected form of integration and include:

- 1. Removal of technical barriers to trade**
Regional economic integration aims at reducing trade barriers between the member states. A quality infrastructure is fundamental to the harmonization and mutual recognition of standards, technical regulations and conformity assessments, thus providing the basis to overcome non-tariff trade barriers.
- 2. Improvement of competitiveness of enterprises**
Regional economic integration creates larger domestic markets and promotes the establishment of transnational value chains. A quality infrastructure increases the compatibility between suppliers and customers, reduces transaction costs, provides developing countries with an easier access to international good practices and improves the competitiveness of small and medium-sized enterprises in particular.
- 3. Strengthening of socio-economic coherence**
Regional economic integration is often characterized by cooperation in the field of individual sector policies, such as environmental and health policies. A quality infrastructure provides the technical framework for establishing common limiting values and other regulatory requirements and provides capacities for the effective implementation of those requirements.
- 4. Safeguarding of interests from other regional economic blocks**
Regional economic integration leads to the creation of economic blocks that significantly shape the global economic framework. A quality infrastructure combines the available technical know-how of its member states and channels the input into multilateral negotiation processes in order to safeguard regional interests.
- 5. Strengthening the negotiating position in trade disputes**
Regional economic integration requires a common position in trade disputes with other economic blocks that will often involve the interpretation of TBT-related facts and findings (such as bans on the import of contaminated food products). A quality infrastructure supports trade policy dialogues with the aid of scientific-technical insights based on recognized test results.

³ On the role technical trade barriers play in EU trade negotiations: see Schildberg (2006)

⁴ See <http://www.saarc-sec.org/?id=59&t=2.1>; status: 09. March 2009

6. Consolidating the regional technological autonomy

Regional economic integration facilitates the bundling of regional resources in order to establish competitive institutions for research and development. A quality infrastructure helps to utilize existing national know-how, to develop specialized networks, and to enhance the technological emancipation of the region.

To what degree the contributions described may actually be realized partly depends on factors beyond the system limits of quality infrastructure. They include the condition of regional transportation and communication networks and the development stage of local production facilities as well as the quality of technical, administrative and political institutions in general. Particularly within the context of the EPAs, the latter is considered to be an important approach with which the disappointing balance of EU-ACP trade may be explained from the perspective of developing countries.⁵ For that reason, development cooperation (also) places a great emphasis on the improvement of institutional capacities in the partner countries.

On the other hand, the effectiveness of the QI system depends on how opportunities and challenges that ensue from the process of regional economic integrations are being handled. Generally stated, opportunities mainly consist of the utilization of potentials for regional cooperation and division of labor, for instance, by pooling laboratory capacities or exchanging expert knowledge. Potential challenges will result in particular from an increased coordination effort as well as from the increased pressure of national systems to harmonize regulatory practices and standards. This applies, for example, when setting and implementing common technical regulations or adapting a common position towards other regional communities and international expert committees.

To sum up, the quality of “institutions” in the sense of rules, enforcement mechanisms and organizations⁶ plays an essential role also within the context of quality infrastructure and essentially determines the effectiveness of the system. Here, the intervention categories consist not only of national, regional and international levels but also of political-administrative and technical structures in the fields of standardization, accreditation or metrology (Figure 4).

⁵ See also Borrman & Busse (2006)

⁶ See also World Bank (2002), 6f.

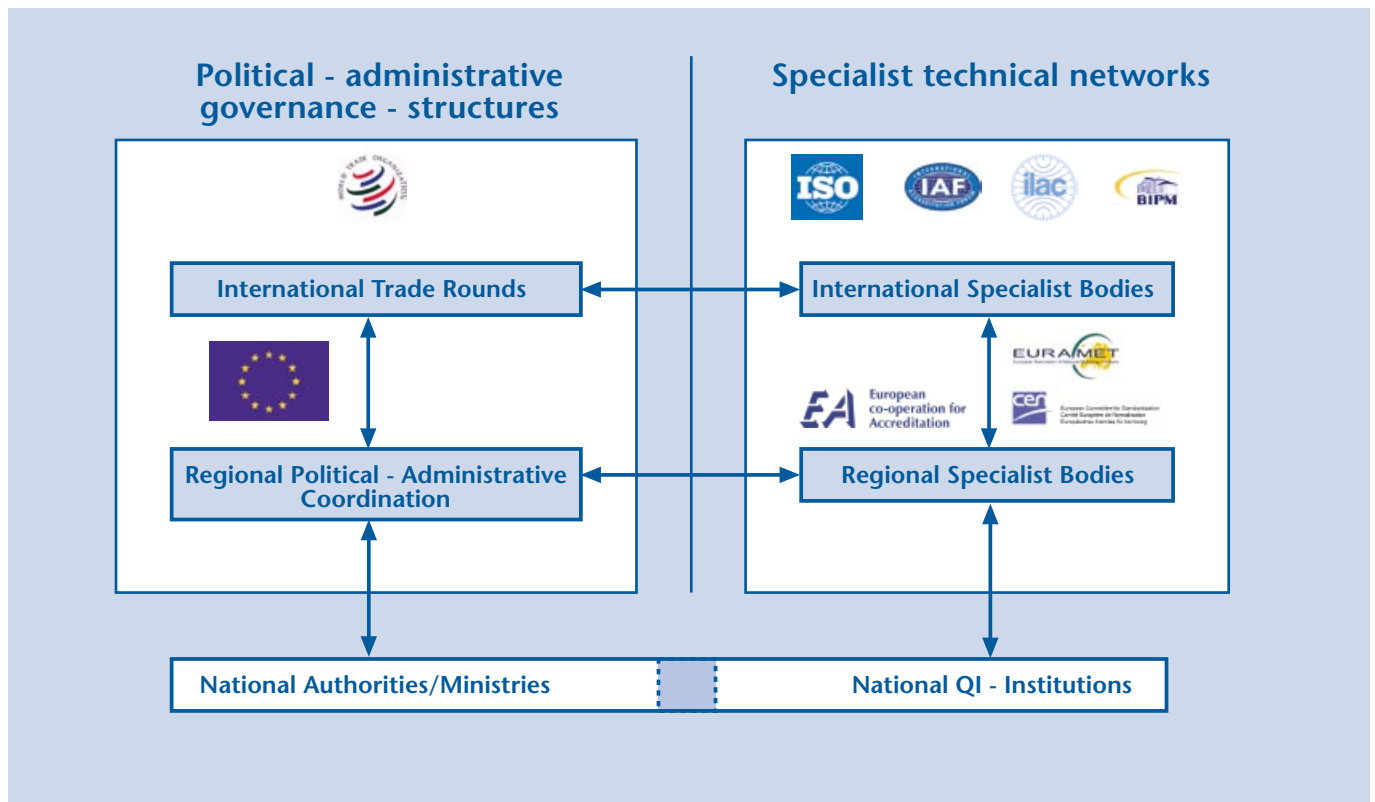


Figure 4: Levels of QI governance structures and professional-technical networks

Source: Own design, taking the example of the European Union

From a regional point of view, the following aspects, which will be examined more closely in Part II of this paper, play a central part in the functioning of quality infrastructure:

1. an effective intra-regional QI governance⁷, instrumental to include the interests and needs of the member states in a balanced decision-making process, to create a common regulatory framework and to strategically develop the regional quality infrastructure;
2. competent QI institutions, necessary to support the political decision-making process on a technical-scientific basis, to offer quality-related services to enterprises and consumers while ensuring that conformity assessments are mutually recognized;
3. specialist technical networks on a (super-) regional level, required to promote international recognition of national QI institutions, to effectively represent the interests of the community and to facilitate the dialogue between the member organizations.

⁷ In accordance with the term of corporate governance, in this context QI governance stands for those structures and rules that are essential for the establishment of strategies and policies relevant to quality (see Chapter 5).

4. Asymmetries within regional integration communities and the role of anchor countries

Regional integration communities are not homogenous structures but rather are marked by asymmetries and imbalances. Those asymmetries may relate to structural factors, such as economic size, factor endowments, per-capita income or degree of industrialization, and policy factors that reflect different preferences, choices and institutional characteristics (Bouzas 2005, 85f). Both dimensions are also found within the context of quality infrastructure which shows distinct differences between member states, for example in terms of regulatory policies or the state of technical development. That particularly applies to southern integration communities that encompass least developed countries (LDCs) as well as threshold countries and industrialized countries.

A quality infrastructure of least developed countries is often marked by

- an incomplete, outdated and/or insufficiently enforced set of standards and technical regulations,
- an unbalanced development of QI elements showing deficiencies particularly in the fields of metrology, testing and accreditation,
- a deficient market surveillance and inspection system as well as a lack of independent consumer information,
- a lack of institutional transparency and international recognition of conformity assessments,
- an insufficient formal network of QI institutions as well as a lack of communication between the technical and the political QI level,
- a lack of financial resources and experts needed in order to effectively include national positions in regional coordination processes,
- an allocation of scarce resources to expensive and inefficient isolated QI elements, partly driven by political ambitions, and
- an overall low degree of quality awareness and a low demand for QI services focusing on the needs of foreign niche markets.

At the other end of the scale there are countries that are of major importance to their region due to their size and economic significance, therefore deserving particular attention (also) within the context of quality infrastructure. Within German development cooperation, the term “anchor countries” has evolved for that group of countries (BMZ 2004b). Having comparably large economies, they usually show a differentiated and relatively well-developed infrastructure whose components in the fields of accreditation and metrology often enjoy international recognition. Moreover, anchor countries are significant representatives of their region within the global governance structures, though to a different degree (Stamm 2008, 23f. and PTB 2007a).

Figure 5 illustrates the relative weight of anchor countries, using South Africa within the South African Development Community (SADC) as an example. It clearly illustrates that South Africa is by far the member state that is most involved in the work of the ISO Technical Committees. Furthermore, South Africa is the only SADC member state that signed the *Mutual and Multilateral Recognition Arrangements* (MRA/MLA) in the sectors of accreditation and metrology, therefore being able to ensure the worldwide recognition of conformity assessments.⁸

⁸ Status of South Africa: Signing of the ILAC-MRA (Testing & Calibration: 11/2000); IAF-MLA (Quality Mgt. Systems: 10/1998, Environmental Mgt. Systems: 10/2004, Product: 10/2004), CIPM-MRA (10/1999); status: 04. March 2009

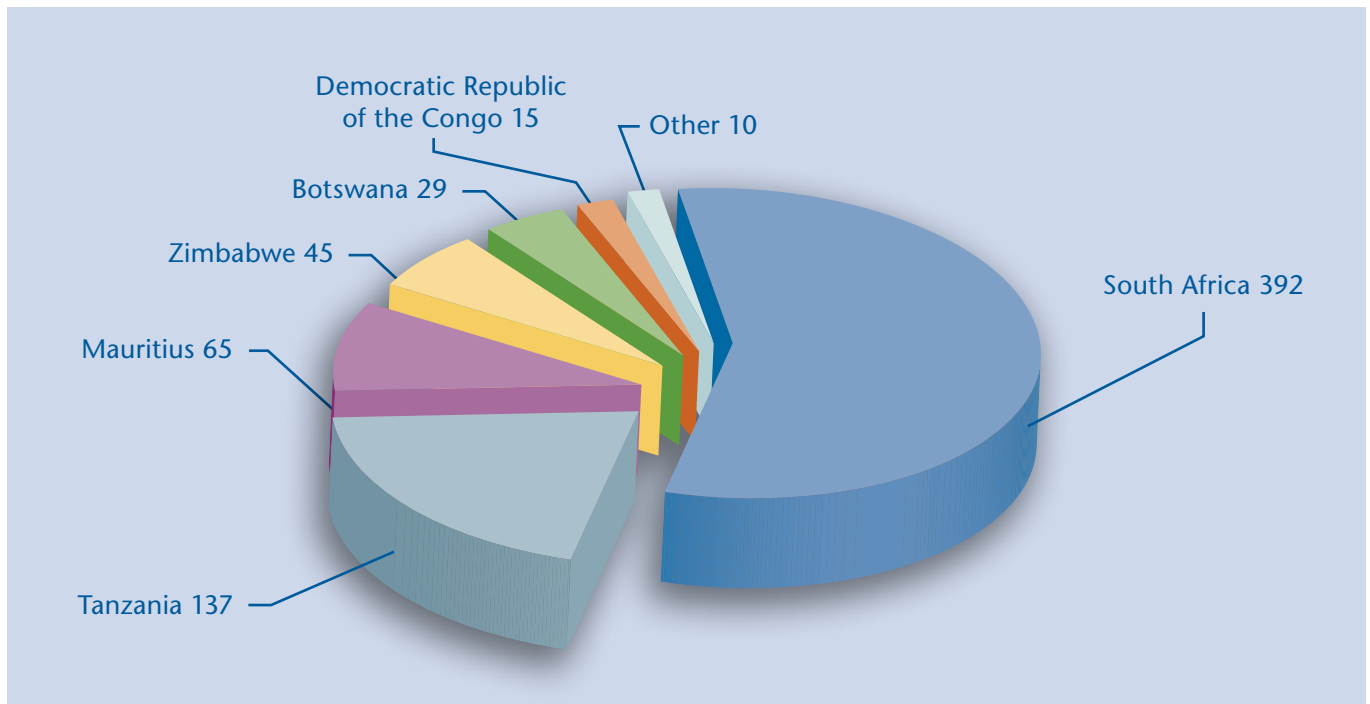


Figure 5: Representation of the SADC-States in the ISO Technical Committees
 Source: http://www.iso.org/iso/about/iso_members.htm; status: 04.03.2009

This imbalance weakens the endeavors of regional integration in several ways. Firstly, it makes it more difficult to define common standards and technical regulations that are in line with the national interests of all member states. Secondly, the poorly developed QI in LDCs results in the fact that even neighboring countries within the community may only have little confidence in the competence of testing and certification bodies, leading to double test procedures and trade barriers within the community. Thirdly, it complicates the effective cooperation of smaller member states in the regional coordination at the political as well as at the technical levels. And in the fourth place, there is the risk of trade and consumer policy distortions since the quality infrastructure is not able to fulfill its function of consumer and environmental protection in every country to the same extent.

Thus, from the perspective of development politics, the question arises as to how existing asymmetries within the QI may be removed and how institutional capacities particularly of least developed economies may be permanently improved and complemented by using regional know-how and resources. Taking the success factors of a regional quality infrastructure identified in Chapter 3 into consideration, there are three approaches to foster regional cooperation. They also represent potential intervention areas of development cooperation and will be treated in greater detail in Chapters 5 - 7 (Figure 6):

- **Approach 1: QI governance**
 Cooperation in the harmonization of standards and technical regulations as well as on basic issues of mutual recognition and market access
- **Approach 2: QI institutions**
 Cooperation in the establishment and promotion of a quality infrastructure that will meet the national and regional demand for quality-related services
- **Approach 3: Specialist Regional Organizations**
 Cooperation in strengthening regional expert networks with particular consideration of the needs of developing countries

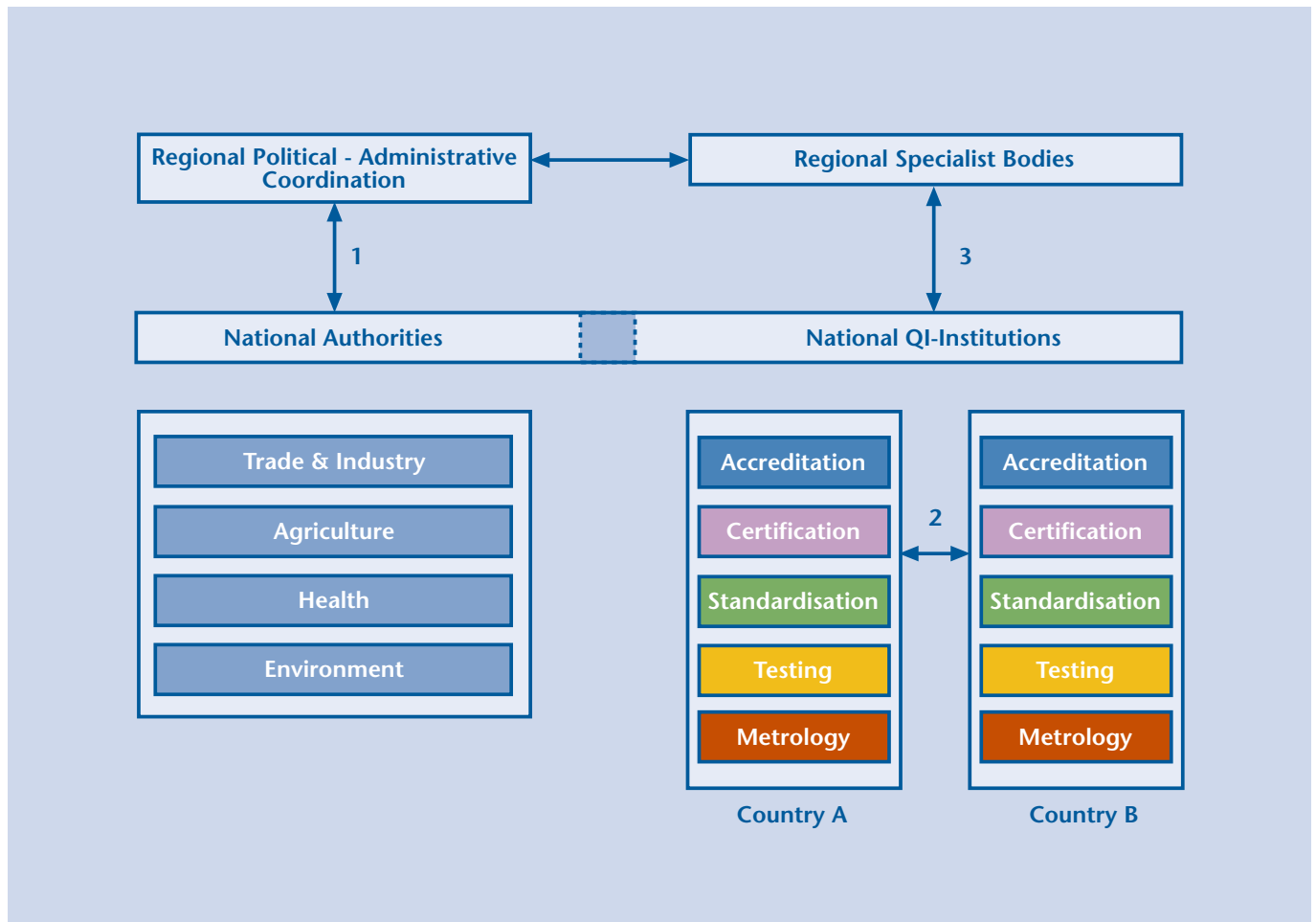


Figure 6: Entry points for regional cooperation in the field of quality infrastructure

Source: Own design

It should be stated from the outset that the role anchor states play regarding their contribution to establishing a regional quality infrastructure may seem distinctly ambivalent. On the one hand, the comparative advantages, resources and know-how of those states could be used to build capacity in their neighboring countries. In that context, such states would also be of interest as partners of development cooperation in the sense of triangular cooperations.⁹ Moreover, due to their presence in international QI committees, anchor states carry out a potential bridging function that can bring developing countries closer to the international QI community.

On the other hand, the strong position anchor countries enjoy bears a series of risks from the perspective of smaller member states. Due to their dominating market position, anchor states might negotiate or interpret trade policy agreements to their own advantage. Furthermore, anchor states could be viewed as undesirable hegemonic powers, creating new dependencies and hindering national QI institutions from becoming mature. After all, the (positive) regional effect the quality infrastructure of an anchor state may create depends, in fact, on the extent to which regional cooperation is politically desired and supported and if a minimum of freedom regarding the movement of persons and goods is granted.

⁹ See also Altenburg & Weikert (2006), 4f.

Part II:

Strengthening QI capacities within a regional context: Areas of activity and contributions of Technical Cooperation

5. Regional cooperation within the scope of QI governance

Governance has many facets and can generally be defined as the rule of the rulers (Grote 2006, 4). Within the context of quality infrastructure and regional economic integration, those rules particularly include strategies, regulations and political decisions that pertain to the intra-regional exchange of goods as well as – within the regulated area – the establishment of the corresponding infrastructure. As the imbalances between the member states (see Chapter 4) suggest, the intended effects of QI governance could be divided into two categories:

1. **Removal of policy asymmetries by coordinating and harmonizing QI-related rules and regulations:**
 - Preparation of regional guidelines, laws and information procedures in the area of standardization and product safety
 - Determination of product areas that are to be harmonized on a regional basis, including the selection of the appropriate harmonization concept
 - Definition of conditions for the mutual recognition of certificates and test reports through regional *Mutual Recognition Arrangements* (MRAs)
2. **Removal of structural asymmetries by granting one-sided preferences and promoting less-developed member states:**
 - Adoption of action plans for the upgrade of quality infrastructure by means of capacity building and regional division of labor
 - Facilitation of the exchange of technical know-how through the establishment of regional working groups and information platforms
 - Inclusion of internationally recognized QI organizations of the integration community in Technical Cooperation activities

The required consensus among the member states on those decisions clearly shows that regional cooperation in the field of QI governance is not an option but rather is imperative.

The responsibility for those types of decisions usually lies with administrative and technical committees that were already introduced as QI governance structures in Chapter 3. They include Standing Committees or Consultative Committees such as the *ASEAN Consultative Committee on Standards and Quality* (ACCSQ)¹⁰. Regarding the institutional set-up, those structures are often found in the department of trade of regional institutions and consist of representatives of national ministries and standards bodies. As a forum for interstate dialogue and an exchange of information, the governance structures play an essential role, since the establishment of trust and personal contacts are among the decisive factors of regulatory cooperation (Sidhu 2008, 3).

¹⁰ For more information on ACCSQ, see <http://www.aseansec.org/4951.htm>; status: 15. April 2009

Due to their mandate and influence on the establishment of the legal and institutional framework, QI governance structures have a decisive influence on the question to what degree regional economic integration presents a stepping stone or rather a stumbling block towards the liberalization of world trade.¹¹ Supporters of regional trade agreements argue that developing countries in particular need a regional approach as an intermediate step towards a stronger participation in international trade. However, the prerequisite for that would be that (OECD 2005, 16)

- negotiations on regional agreements are not carried out isolated from global developments towards harmonization and mutual recognition,
- regional agreements are based on the needs of the member states and in line with regional goals of integration,
- all efforts are based on the clear political commitment towards trade liberalization and economic integration, and
- resources are available that specifically aim at the support of developing countries, if possible, within the range of integrated economic promotion programs.

These requirements imply that, on the one hand, also regional integration communities with a rather low degree of institutionalization require effective QI governance structures. On the other hand, those structures should function in accordance with certain principles that may be summarized in terms of international good practices (see 5.1), participation (see 5.2) and information (see 5.3). As the following examples show, Technical Cooperation can effectively support the strengthening of institutional capacities in different ways. The precondition for that, however, is that Technical Cooperation would earn sufficient trust which could gradually be obtained by “technical” expert missions before a more political consultancy approach could be introduced.

5.1 Recourse to international good practices

Regional attempts for harmonization should apply existing international standards and schemes for mutual recognition to the widest extent.

- In conjunction with the principles of the WTO Agreement on Technical Barriers to Trade, international standards should also be applied in the regional context as much as possible and wherever available. The definition of regional standards should, in contrast, be restricted to cases where such international standards would be ineffective or inappropriate, for instance, due to fundamental climatic, geographical or technological factors.¹²
- The problem of differing technical regulations may generally be approached in three ways within an integration community (WTO 2005, 52f.): By harmonization, by mutual recognition or by harmonization of essential product specifications. The third approach, for instance, is successfully applied within the EU by using the New Approach Directives. It is based on an assumption of conformity by applying (non-mandatory) harmonized standards that are set by the European standards bodies (CEN, CENELEC, ETSI).¹³

¹¹ Some arguments of RTA supporters and opponents are documented in: UNCTAD (2007), 37f.

¹² See also WTO TBT Agreement, Annex 3: Code of Code Practices for the preparation, adoption and application of standards

¹³ The so-called Blue Guide can be downloaded under: <http://ec.europa.eu/enterprise/policies/single-market-goods/documents/blue-guide/>

Case study 1: Strengthening QI governance structures of the *East African Community* (EAC)

Background

The five member states of the EAC (Kenya, Tanzania, Uganda as well as – as of 2007 – Rwanda and Burundi) have made a common market their ambitious goal projected for the year 2010. The main barriers include the missing infrastructure as well as missing or non-harmonized legal regulations, affecting the national, intra-regional and international trade of goods. The EAC Protocol on Standards, Quality Assurance, Metrology and Testing (SQMT) signed in 2001 to overcome those barriers is coordinated by a regional sector committee (East African Standards Committee).

Approach

Since 2004, the PTB project has been supporting the implementation of the SQMT Protocol with a two-fold approach: First, by institutional capacity building and second, by providing consultancy on the preparation of the regulatory framework. The latter aims at promoting the alignment with international procedures of mutual recognition, the implementation of QI-relevant legislation as well as the harmonization of standards at the regional level. Moreover, communication and networking are supported by means of an EAC-Quality Net Website (<http://www.eac-quality.net>).

Results / goals

Facilitated by the project, a generic EAC Quality Infrastructure Act (SQMT Act, 2006) was signed that serves as a framework for a uniform QI policy and its mechanisms of coordination. Besides, sector-specific as well as national regulations have been prepared. However, it has become obvious that the existing regional and national regulations partly contradict the new framework law and that continuous systematic consultations are a necessity.

5.2 Participation

Though the national and regional authorities are responsible for setting up the technical and regulatory framework, its preparation requires the active participation of private and non-governmental stakeholders.

- Standards should represent the technical state-of-the-art and excel by focusing on practical application and demand. The inclusion of interested parties, such as enterprises and consumers, is therefore – at the regional as well as national or international levels – essential and as much a part of the acknowledged principles of standardization work as transparency, openness and consensus are (Inklaar 2008).
- Legally binding technical regulations require the availability of a conformity assessment infrastructure which – in the sense of market surveillance – is capable of monitoring if the regulations are complied with. Legislation must therefore take the actual competences of QI service providers into consideration by adequately involving them at the technical level (OECD 2005, 43).
- When formalizing the mutual recognition of conformity assessments in the regulated area, regulatory authorities may – at least in a more progressive stage of development – include the know-how of QI organizations, such as accreditation bodies, in order to ensure consistency with international practices. And vice versa, accreditation bodies are expected to try to actively engage in the process of preparing technical regulations and recognition procedures.¹⁴

¹⁴ See the example of EA (2008)

5.3 Information and communication

Regional QI governance expands the impact of decision-making while increasing the distance between decision makers, QI institutions and interested parties. Effective communication and information are therefore crucial in order to prepare standardization and legislation, communicate available services and improve the level of acceptance of regional decision-making.

- “Rules” on free trade defined on a regional level must be harmonized with national product regulations. A smooth flow of information between the authorities and responsible ministries will serve to coordinate negotiating positions and implementing steps. That alone, however, can achieve only little if there is a lack of political will to implement regional decisions without substantial delay.
- Small and medium-sized enterprises as well as consumers particularly depend on external sources of information about standards, technical regulations and QI services. However, sometimes this information is more easily available on export markets than on the very regional market (OECD 2005, 14). Therefore, it would make sense to install data banks and information portals focusing on domestic and regional markets, such as the IQ Maghreb information portal (Case study 2).

Case study 2: Creation of an information portal on quality infrastructure in the Maghreb region

Background

The three partner states of the PTB Maghreb Project (Tunisia, Algeria and Morocco) have continuously focused their development strategies on the access to international markets and to Europe in particular. The Association Agreement with the EU is a clear expression of that development. Since the subject of QI has not yet been grounded institutionally within the Union du Maghreb Arabe (UMA) as a regional economic community, working relations on an interstate level have been formalized by the foundation of a regional metrology organization (MAGMET).

Approach

In order to improve communication, the website *QI Maghreb* (<http://www.iq-maghreb.net>) was established with assistance through a regional PTB project. That website focuses on customers and addresses industry, laboratories as well as QI institutions of the region. It provides information on regionally available QI services, such as accredited laboratories, assessors and certification bodies. It covers all sectors of QI. In addition to a public section, a “closed” section where access is limited to the stakeholders participating in the project was established as well, in order to provide information about activities and to facilitate joint project monitoring.

Results / goals

In May 2008, the website was officially put online on the occasion of World Metrology Day and accompanied by a mailing campaign to potential users. Already during the conception phase of the website it became obvious that internet-supported communication improves the regional network of QI institutions at the working level as well.

6. Regional approaches to establishing QI institutions

As experiences from bilateral Technical Cooperation show, the establishment of a full-fledged national quality infrastructure requires considerable investments and ties up resources on a long-term basis. For many countries with limited financial means and a relatively modest demand for quality-related services, this is neither feasible nor useful. Instead, the common use of a complementary infrastructure or a more intense expert exchange appears to be a better approach (BMZ 2004a, 12f).

For an initial estimation as to what extent QI capacities would need to be established at a national level or if a regional division of labor would be more recommendable, a clustering of QI services regarding the criteria “costs” and “demand” could be undertaken (Figure 7).¹⁵ Though particularly the areas of product testing and calibrations contain a wide range of possible services that prevent a clear allocation, QI services can be roughly divided into the following categories:

- services that have a rather high cost but often a low demand, such as accreditations or high-end calibrations
- services that have a rather low cost and a great demand, such as standard product tests and information services on standards and technical regulations

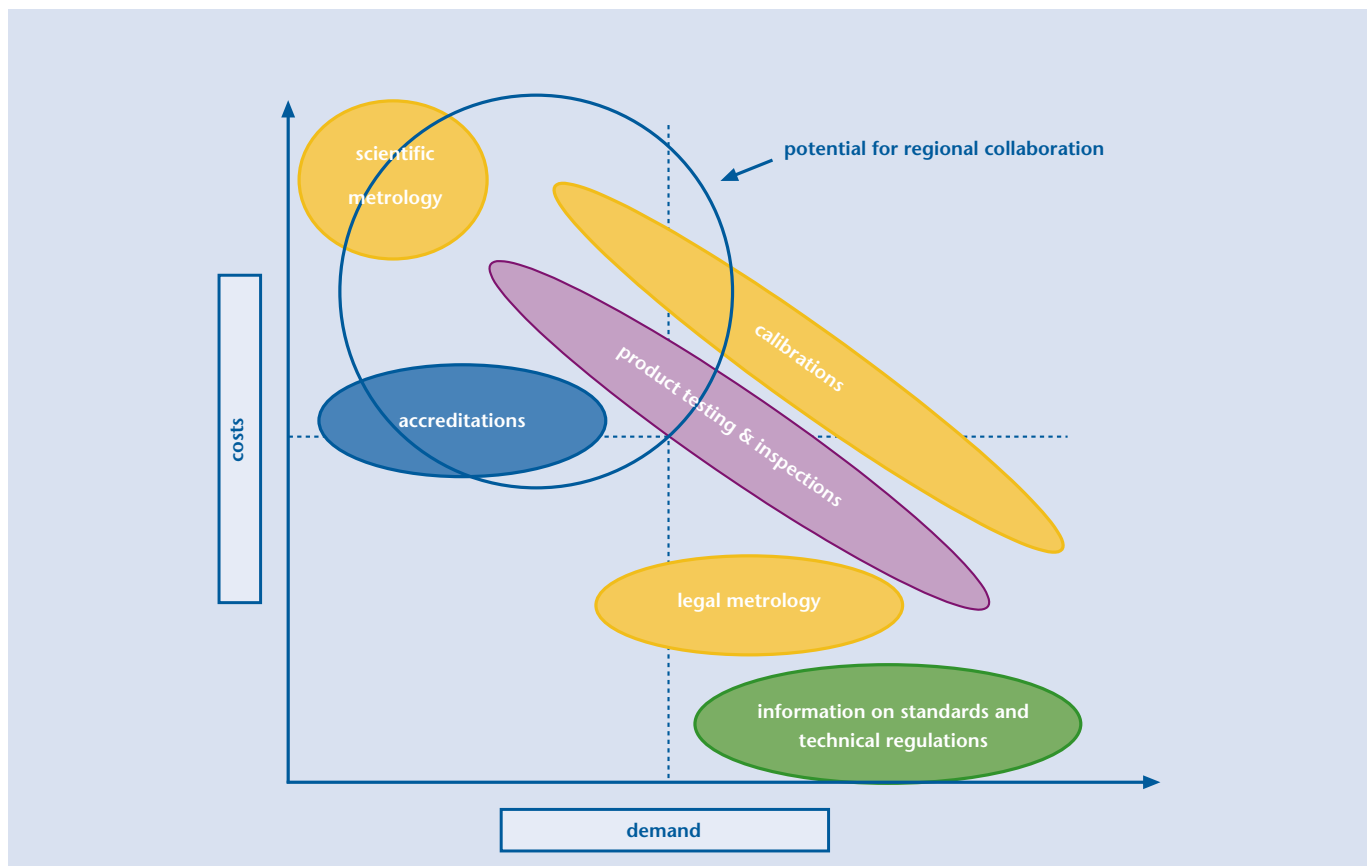


Figure 7: Clustering of QI services according to costs and demand

Source: Own design, based on UNIDO (2007), 6f., respectively Goonatilake & Dogun (2007), 12f.

¹⁵ See also UNIDO (2007), 6f. and Goonatilake & Dogun (2007), 12f.; Note: The “costs” are a combination of initial investments and current costs; to estimate “demand”, size, frequency and urgency are critical factors

Whereas in the second case, a national provision appears appropriate even in smaller states, in the first case a regional approach is principally desirable. It should pursue the following goals:

- to ensure - from a regional point of view - the availability of QI services, focusing on the demands of industry and consumer protection,
- to consider financial aspects such as available resources and willingness to pay, in order to ensure the sustainability of services, and
- to support a gradual adaptation of QI capacities in smaller member states to international requirements in the sense of long-term capacity building

In the following, practical examples of regional cooperation in the areas of metrology and accreditation as well as the supportive role Technical Cooperation can play are outlined.

6.1 Regional approaches in the field of metrology

Ideally, the metrological infrastructure of a country consists of a hierarchy on three levels. The top forms the National Metrology Institute (NMI) which is entrusted with fundamental research and development but also with the realization, maintenance and dissemination of the units of the SI System (international system of units). Besides, the NMI ensures the metrological traceability of (accredited) calibration laboratories (Level 2), which in turn provide calibration services to field laboratories at the working level (Level 3). These include testing laboratories run by industry as well as legal metrology laboratories relevant to environmental and consumer protection.

Especially the demand for traceability in legal metrology requires a fundamental metrological infrastructure regarding mass, temperature, volume and length, on a national basis. Potential for a regional division of labor and cooperation, on the other hand, exists in the area of international traceability, the establishment of specialized calibration laboratories as well as training and consultations.

a) Connecting national metrology institutes with the international unit system (Level 1)

Periodic calibration of the national measurement standards is essential for the acceptance of services offered by the NMI. Since the establishment of primary standards and the direct participation in international comparison measurements are often too challenging for smaller NMIs, the collaboration with a regional partner institute that has obtained the required recognition by signing the international CIPM-MRA would be a useful option (Figure 8). A regular recalibration could be assured by long-term service contracts that, in turn, could provide the framework for supplementary consulting and training services (Case Study 3).

Bilateral or regional intercomparisons have shown to be valuable benchmarking instruments to assess the actual competence of the NMI and to identify needs for corrective action. Moreover, comparison measurements offer the opportunity to enhance the contact among metrology institutes, particularly if these measurements are accompanied by preparation and evaluation workshops. NMIs in anchor countries have an important function concerning inter-comparisons as well, as they usually represent technical competence centers within the region and are well linked internationally.

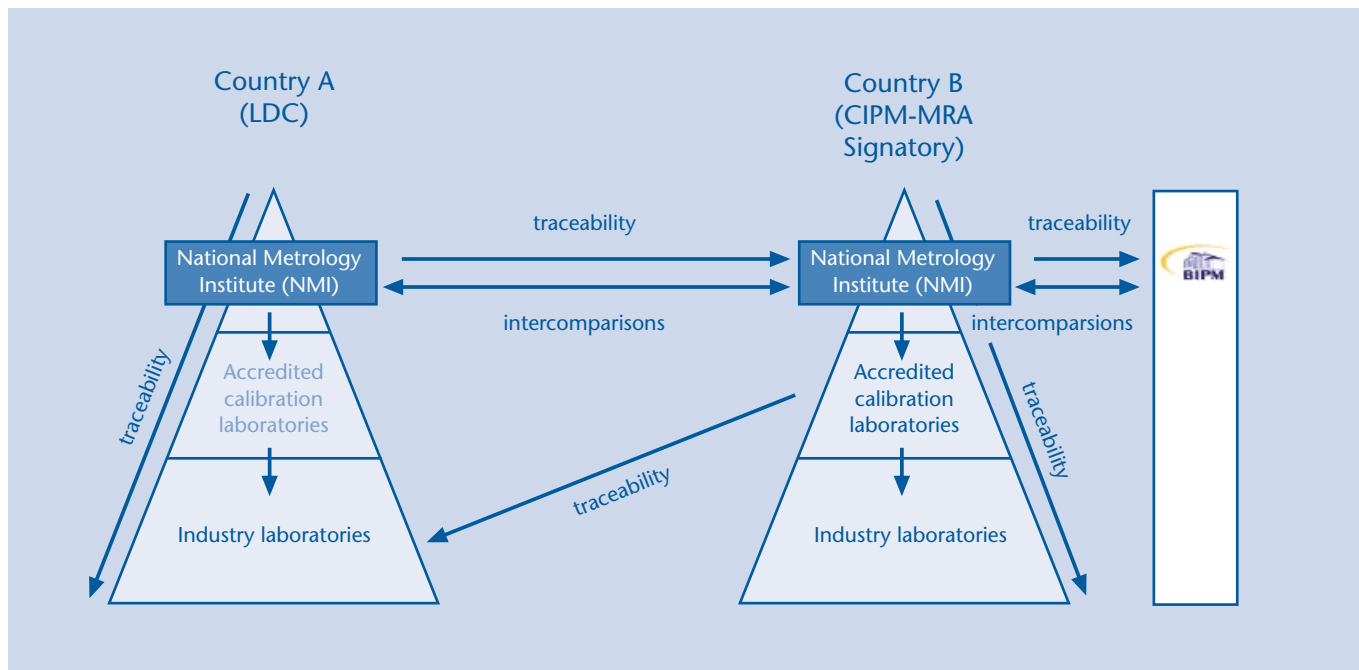


Figure 8: Entry points for regional cooperation in the field of metrology

Source: Own design, adapted from Sanetra & Marbán (2006)

Case Study 3: Cooperation with the National Metrology Institute of India within the scope of the South Asian Association for Regional Cooperation (SAARC)

Background

The National Physical Laboratory India (NPLI) - as the National Metrology Institute - occupies a leading position within SAARC. Currently NPLI is the only NMI that has signed the CIPM-MRA and that can guarantee traceability to the SI in numerous measurement fields. The NMIs of the bordering states, among them five LDCs (Afghanistan, Bangladesh, Bhutan, Maldives, Nepal), in contrast, are mostly in the initial set-up stage and require technical support in various ways.

Approach

NPLI ensures the traceability of basic measurement standards under preferential conditions in countries such as Nepal and Bhutan. Furthermore, regional intercomparison measurements, for which NPLI acts as pilot laboratory, were organized within the scope of collaboration between the SAARC Secretariat and PTB. Complementary training and consultancy missions of NPLI, with financial support by PTB, shall ensure the effectiveness of such measures.

Results / Goals

The cooperation facilitates the international traceability of key measurement standards in some neighboring SAARC countries at a nominal fee rate. Personal contacts in the region not well linked in other aspects help to build confidence in the technical competence of the partners. On the other hand, some administrative hurdles of movement of persons and the transport of the artifacts still present a challenge.

b) Establishment of a network of specialized calibration laboratories (Level 2)

The demand for (accredited) calibration services essentially depends on the industrial basis as well as on the legal testing and verification requirements. Concerning least developed countries, both factors often fall short of justifying investments in a purely national calibration infrastructure. In such cases, the NMI may assume a double function, i.e. it acts as calibration laboratory with an international traceability. However, due to limited human and financial resources, an NMI will usually not be able to provide specialized industrial calibration services. Therefore, these countries may opt for a regional solution aiming at the establishment of a complementary system of reference laboratories. Due to a greater mass of potential customers, the reference laboratories could strive for accreditation in accordance with ISO 17025 (Case Study 4). The prerequisite for that would be the political support of that division of labor which in practice, however, faces the risk of failing because of national self-interests or administrative hurdles.

A complementary infrastructure can also be a feasible option in the field of metrology in chemistry or specialized testing laboratories, as both areas show a high degree of complexity and high costs. For instance, the establishment of a national or regional network of reference laboratories that could also be made to qualify for the production of reference materials and the organization of comparison measurements for the regional market might be a suitable option for countries with limited expertise in chemical metrology. Similarly, the promotion of regionally specialized test laboratories can help to ensure that a certain availability of internationally recognized quality services is ensured on a long-term basis.

Case Study 4: The establishment of regional reference laboratories in the West African Economic and Monetary Union (UEMOA)

Background

The majority of the states of the West African Economic and Monetary Union are marked by a weak economic power. Therefore there is only a low demand for industrial metrology and testing services in most of those countries. Currently it is mainly met by European calibration laboratories, whereas the National Metrology Institutes have largely been limiting themselves to legal metrology so far. This is partly due to the fact that the important part industrial metrology plays in economic development has not yet been realized and supported politically in a sufficient way.

Approach

The establishment of a regional network of reference laboratories was initiated by the UEMOA Secretariat in Burkina Faso in 2006 and supported by a regional PTB project. Those laboratories are to ensure the traceability of private calibration laboratories and meet the growing demand for more sophisticated calibrations. However, the project partners have only accepted state metrology institutes as suitable candidates.

Results / goals

After an initial coordination phase, four reference laboratories in four countries were identified for basic measurement fields (mass, temperature, volume, pressure) in a call for bids. They are supported by means of consultations, training on-site and in Europe as well as by a supply of measuring instruments, assisting them to finally become accredited service providers for their region.

6.2 Regional approaches in the field of accreditation

The establishment of a national accreditation body is generally a worthwhile, though very challenging goal that requires a careful analysis of demand and a cost-benefit analysis. Particularly in developing countries with a rather low demand for accreditations, the question arises whether conformity assessments need to be recognized only on a national or on a regional and international basis. A second step would be to decide to what extent the accreditation body is to be established merely with national resources or within the scope of a regional division of labor.

Ensuring the independence and financial sustainability as well as the professional competence of the assessor pool is the essential challenge that occurs when establishing an accreditation body. A lack of income from accreditation services will result in the fact that the financing of the accreditation body must be secured by means of medium-to-long-term subsidies granted by the government. It is also difficult for experts in small countries to gain and maintain the required experience and competence and to stay as neutral towards customers, market competitors and regulating authorities as necessary. That may result in a conflict of interests and in different qualifications in comparison with the personnel of larger accreditation bodies, creating problems regarding the acceptance of accreditation results. The decisive element of accreditation, namely the confidence in the certificates issued, could also be quickly destroyed by political influence and corruption.

The experience gained from the practical project work of PTB shows that – depending on the respective economic conditions – a critical number of 100 to 250 customers are needed to enable an accreditation body to ensure its sustainability in terms of technical competence and financial resources in order to be recognized internationally. That amount cannot be realized in many small economies; therefore a system of regional collaboration and division of labor might be a more feasible approach. The following models are potential options:

- Installation of an office that serves as a national focal point and supports the administrative processing of applications for accreditation in conjunction with a recognized accreditation body of a neighboring country (Figure 9)
- Establishment of a regional network of accreditation bodies that work on a complementary basis and support each other by exchanging experts and know-how
- Creation of a regional accreditation body located on a central site and independently covering the accreditation activities of the whole region
- Establishment of an accreditation body that focuses on the national market and cooperates with an internationally recognized accreditation body in selected areas whenever necessary

The opportunities for regional cooperation that arise from those options are manifold. They range from the establishment of regional databases to joint training courses and joint accreditations of established and developing accreditation bodies.¹⁶ The main attraction regional collaboration offers from the perspective of development politics is the chance to satisfy the demand for internationally accepted accreditation services even in smaller countries directly and inexpensively, while supporting the gradual establishment of competent national structures. Once again, anchor countries are important partners in the endeavor to advance the establishment of regional capacities as well as the “anchoring” of neighboring LDCs in international networks.

¹⁶ See also Kaiser & Kindler (2007)

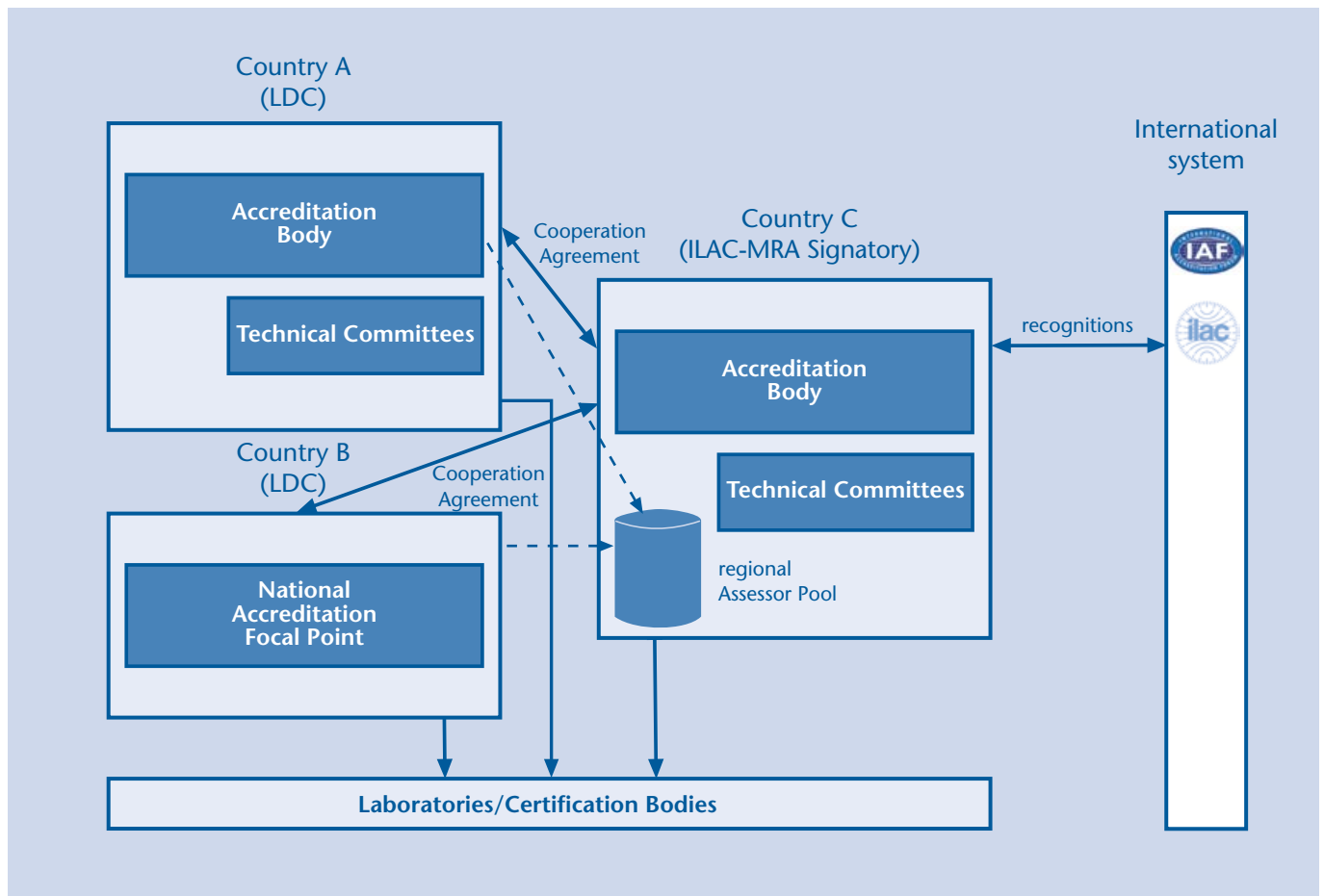


Figure 9: Approach for regional cooperation in the field of accreditation
 Source: Own design, adapted from Kaiser & Kindler (2007)

Two examples of regional approach in accreditation are outlined below.

a) Establishment of a regional accreditation system

At the end of the 1990s, the first model of a regional accreditation system was introduced in Southern Africa as the Southern African Development Community Accreditation (SADCA) (Case Study 5). SADCA is a regional cooperation structure that is in charge of the whole territory of SADC and the first regional accreditation system worldwide. The actual accreditations are to be granted by the regional accreditation body, SADCAS, which was registered in Botswana in 2007. That neither contradicts nor competes with existing national accreditation facilities in the region but rather allows for the integration of existing as well as future national accreditation bodies within the regional system, respectively the establishment of national focal points for countries without an own accreditation body. The structure represents a flexible and expandable accreditation structure with regional governance structures and a regional pool of experts that corresponds with the status of development and the heterogeneity of the region. Therefore, other regional communities within and outside of Africa paid a lot of attention to the system.

Case Study 5: The regional accreditation system of the Southern African Development Community (SADC)

Background

Most SADC countries are marked by a weak economic power and a small domestic market that would not justify the establishment of independent accreditation bodies. Solely South Africa disposes of a fully functioning and internationally recognized accreditation body (SANAS), whereas Mauritius is currently in the process of establishing a national accreditation body.

Approach

National Accreditation Focal Points (NAFPs) were established and trained in all other SADC countries by using the regional SADCA structure. The NAFPs act as competent contact points for potential customers. At the same time, a regional pool of experts was trained and the regional SADCAS accreditation body was established. The counseling by the PTB contributed to the establishment of the legal framework of SADCAS and facilitated the qualification of the NAFPs in the neighboring countries as well as of the regional pool of experts. The preconditions for future international recognition were fulfilled through the close coordination with the international cooperation networks of ILAC and IAF where SADCA, as the Regional Cooperation Body, i.e. the *Special Recognition Organization – Regional Accreditation Group*, enjoys the status of being a member.

Results / goals

By entering SADCAS (*SADC Accreditation Service*) into the company register in Botswana, the first regional accreditation body worldwide was officially founded.

b) Establishment of a decentralized system of accreditation alliances

A promising alternative to the establishment of a central accreditation body that is responsible for the whole region and that also acts as a member of the international organizations of ILAC and IAF is the establishment of a decentralized network of independent accreditation bodies. The core of such alliances is the coordinated, voluntary cooperation between full-fledged accreditation bodies (ideally MRA/MLA signatories) and those that are being established. A formal basis that covers all legal aspects – which tends to make its establishment elaborate and time-consuming – is waived at least at the initial stage. Depending on the intensity of the cooperation and how the tasks are divided, the small accreditation bodies will function as *national accreditation focal points* or *accreditation partners* without the independence of these bodies being questioned.

The *Central American Accreditation Forum (FOCA)* (Case Study 6) is considered to be a model of that type of alliance. Initially the cooperation focused on technical collaboration, whereas the political foundation was developed at a later stage.

Case Study 6: Regional cooperation in the field of accreditation in Central America

Background

The member states of the Central American Integration System (SICA) have small economies with only a low demand for conformity assessment services. Under such circumstances, a sustainable operation of internationally recognized accreditation bodies in each country will obviously not be possible in the near future. A lack of communication and cooperation between these bodies, most of which are located in public institutions, makes the situation even more difficult.

Approach

The aim of the regional cooperation is to strengthen the accreditation bodies by establishing national competence in order to meet the demands of the market on all issues of conformity assessment. Furthermore, the demand for accreditations is stimulated by the continuous improvement of quality in selected sectors, such as test and calibration laboratories, and by promoting the implementation of management systems in small and medium-sized companies. PTB has been supporting that process financially and technically.

Results / goals

Initially started as a project-related coordination group, a work platform for the regional cooperation in accreditation has been developed, consisting of representatives of the accreditation bodies. This platform has been transformed into the regional Central American Accreditation Forum (FOCA) and has by now been formally recognized by SICA as being an instrument of regional integration. The presidency of FOCA is rotated among its members. A mutual exchange of information, the harmonization of documents, the exchange of personnel in assessments, and the organization of intercomparisons are only some effects of that initiative. Costa Rica and Guatemala gained international recognition by signing the IAAC-MLA (currently for testing laboratories, though an expansion is desired) and assist in establishing accreditation bodies in neighboring countries by using a model of *joint accreditations*.

7. Strengthening regional specialist organizations

Regional technical networks or “specialist regional bodies” are probably the most visible expression of transnational cooperation within the field of quality infrastructure. That particularly applies to the areas of standardization, metrology and accreditation, where structures have been divided into national, regional and international organizations and are integrated into a system of mutual cooperation and recognition. In the field of standardization, for example, ISO has 10 officially recognized regional partner organizations as well as hundreds of additional regional partners without any formal recognition. As mediators between the global and the national levels, the recognized regional standards organizations have committed themselves to accept ISO standards as the national standards of their members as widely as possible.

The regional structure within the field of metrology and accreditation is especially stringent. The reasons are partly of a historical nature, yet, this structure also reflects the importance of quality assurance for conformity assessments that is characterized by international requirements: The national metrology institutes and accreditation bodies – the technical backbone of competence evaluation and traceability of laboratories and certification bodies – depend to a great extent on formalized cooperation at a regional level. The regional organizations, on the other hand, are linked to the leading international umbrella organizations via a system of recognition and memberships, i.e.

- concerning metrology: the *Bureau International des Poids et Mesures (BIPM)*, respectively the *Organisation International de Métrologie Légale (OIML)*
- concerning the accreditation of laboratories and certification bodies: the *International Laboratory Accreditation Cooperation (ILAC)*, respectively the *International Accreditation Forum (IAF)*.

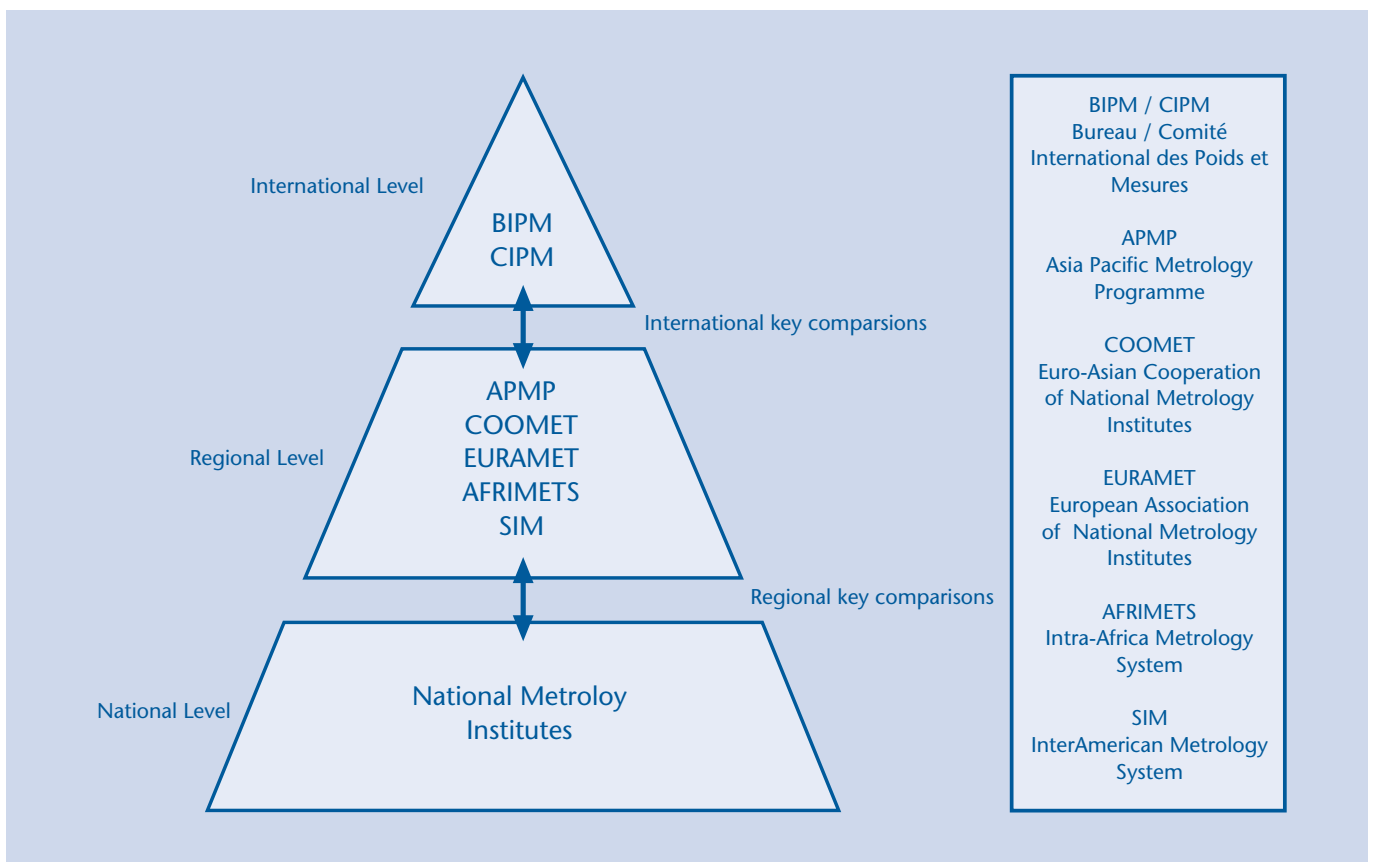


Figure 10: Specialist Regional Bodies – Metrology (scientific and industrial metrology)
Source: Own design

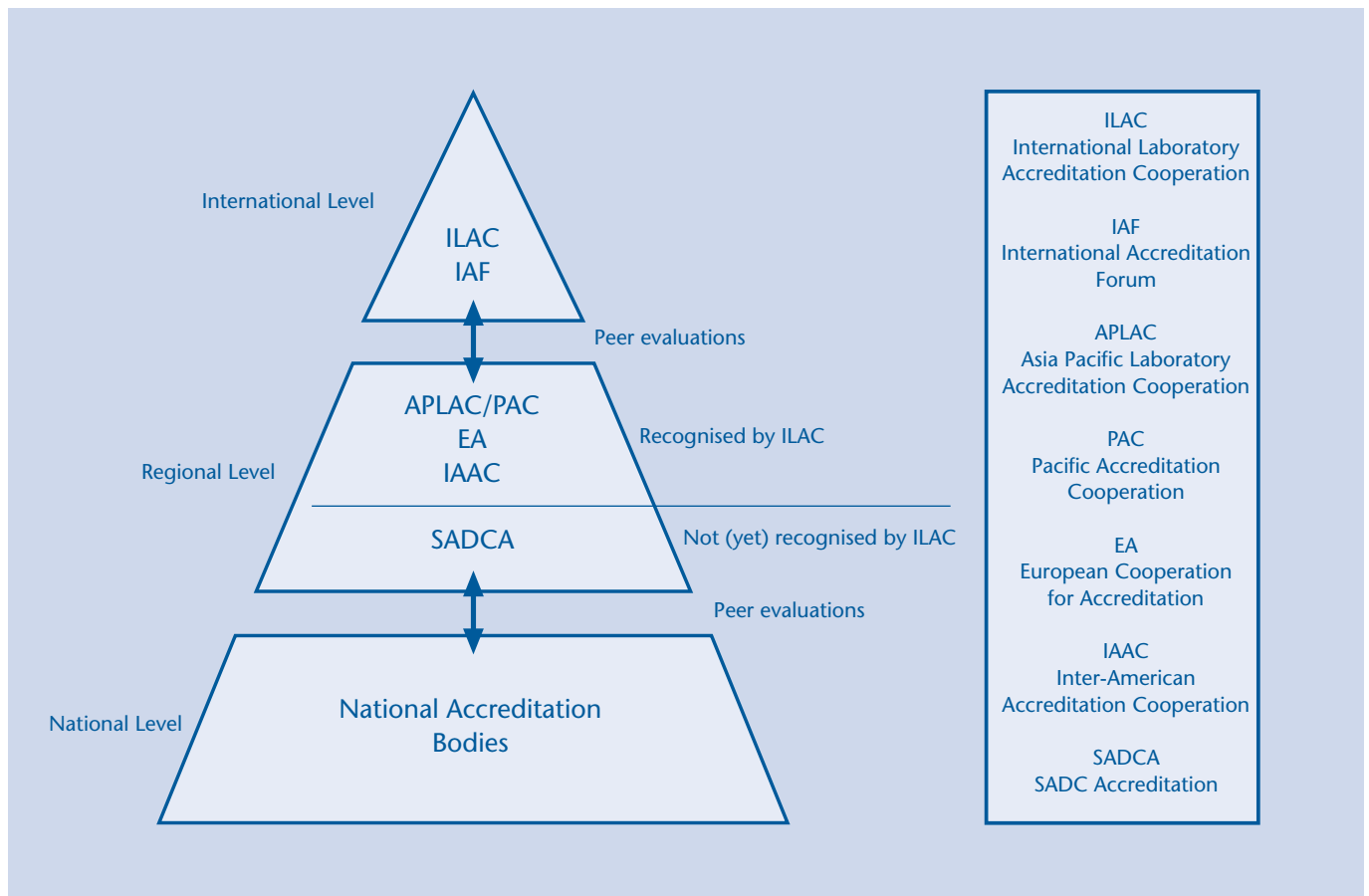


Figure 11: Specialist Regional Bodies– accreditation
Source: Own design

From the perspective of development politics, the relevance of specialist regional bodies is mainly based on the following aspects:

- International recognition and coherence**
Since they are tied into a global system of mutual evaluations and comparisons, specialist regional organizations facilitate the international recognition of their members. The basis for that is an intra-regional system of assessments and comparison measurements that, in turn, is subjected to interregional evaluations.
- Representation of interests**
Specialist regional organizations collect regional know-how and act as a representative of their interests towards other regional organizations and international committees. At the same time, they serve as cooperation partners within the intra-regional QI network, contributing for instance to the harmonization of technical documents and regulations.
- A forum for dialogue and cooperation**
Specialist regional organizations form the organizational framework for the exchange of experience, information and (scientific) cooperation. Their tasks include the organization of regional training courses that especially the smaller member states without any pertinent international contacts benefit from.
- Building of trust**
Regional specialist organizations provide more transparency, i.e. through mutual assessments, and enhance personal relations among the national QI partner institutions. That effect is of particular importance to smaller states that work in greater isolation, frequently lacking any other means of building trust.

However, the use of those potentials implies a range of challenges for regions and countries that are less developed. Apart from the fact that particularly the African Continent and Central Asia contain areas that still have no regional representations, the effectiveness of sector networks differs considerably, depending on the level of organizational sophistication and the membership structure. Another problem is the fact that, due to a lack in financial and human resources, especially LDCs will often not be able to participate in regional meetings, and that specialist organizations mainly feel obliged to treat all members equally instead of taking the direct sponsoring of weaker members sufficiently into consideration.

A first approach of Technical Cooperation would therefore be to support capacity development of specialist organizations in their function as internationally recognized bodies that represent the interests of their region. Based on that, an improved integration of developing countries would require their active participation in regional meetings as well as the development of adequate structures and services. That could be achieved by the installation of committees similar to the ISO-DEVCO Committee or the *Developing Economies' Committee* (DEC) of the Asia Pacific Metrology Programs (APMP) (Case Study 7). Here the main contribution of Technical Cooperation would be to apply experience gained during bilateral project work to the development of regional training activities and to make other members receptive to the special situation of developing countries.

Case Study 7: The Developing Economies' Committee (DEC) of APMP and its cooperation with PTB

Background

The APMP Developing Economies' Committee (DEC) was established during the 16th APMP General Assembly in Thailand in the year 2000. The objective of DEC is "to help address the needs of APMP member National Metrology Institutes from developing economies, and to oversee and coordinate associated work programs" (<http://www.apmpweb.org/>). However, besides financial resources, any concrete measures require a strategic orientation the DEC was missing in the initial phase.

Approach

The support of DEC by PTB is based on a multi-level approach: Regarding strategy development, PTB provides support on the design of training activities with a focus on LDCs. On an operational level, PTB supports the implementation of regional activities, such as comparison measurements between national metrology institutes or the preparation of guidelines for the establishment of a national infrastructure within the field of metrology in chemistry. Moreover, case studies on the strengthening of test and calibration services in certain product sectors are to combine the regional dialogue with national programs and to familiarize LDCs with APMP.

Results / goals

Based on the results of several workshops accompanying the semi-annual DEC meetings, a comprehensive work program has been prepared that serves as the framework for APMP internal cooperations and for the cooperation with other donor agencies. Furthermore the work of DEC also encouraged other leading QI institutions of the region, such as in Thailand and in India, for a greater commitment for technical cooperation. The processes of coordinating between the regional and the national levels still appear to require improvement, though.

Possible measures of specific services for least developed countries within the field of metrology are:

- Organization of regional intercomparison measurements on a lower metrological level, taking into account the existing technical and human resource capacities of LDCs
- Supplementing regular regional comparison measurements with training workshops on the preparation and evaluation of comparison measurements
- Use of regional experts for bilateral consultation and training measures in individual countries
- Use of regional meetings for strategy workshops, for instance, on the establishment and use of common complementary infrastructures
- Provision of internships and in-house training to members of smaller NMIs in developed partner institutions

Particularly during the initial phase, those supportive measures could be financed with funds from the Technical Cooperation. Subsequently, however, the resources of the specialist organizations should be made available for that purpose, through co-financing of the cooperation partners involved, if required, to ensure its sustainability.

In conclusion, an example of Technical Cooperation with the regional metrology organization of COOMET is shown:

Case Study 8: The formation of a subcommittee for the establishment of a basic metrological infrastructure in COOMET member states

Background

In 1991, COOMET was established as a cooperation of state metrology institutes on the basis of a memorandum on cooperation due to the cessation of the Soviet Union and the socialist economic system in the states of Eastern Europe. The states that ensued are very heterogeneous. The committee is to combine the needs of the growing economies and act as representative of their interests towards the stronger member states.

Approach

Support by PTB is provided on all work levels of the regional metrology organization and is not limited to the smaller member countries. In addition to regional activities, PTB also supports bilateral measures that depend on the individual needs of the countries as supplementary activities, i.e. preconditions of regional activities.

Results / goals

The issue of heterogeneity and the fact that the work of RMO would also need to focus on the less developed countries have been recognized. Planned measures for the support of the countries that joined the subcommittee have been integrated into the overall work program of COOMET. Experts from more developed COOMET member states carry out tasks required for the realization of projects, such as the head of the Technical Committee for Quality (Slovakia and EURAMET) and the head of the Joint Committee for Measurement Standards (Russia).

Conclusions and lessons learned

A well-functioning quality infrastructure contributes in many ways to regional economic integration. In addition to the removal of technical barriers to trade, it serves to enhance the socio-economic coherence as well as to support inter-regional trade policy dialogue. That requires effective intra-regional QI governance, competent QI institutions as well as the establishment of technical networks on a regional level.

Regarding Technical Cooperation, entry points to support regional QI approaches can be found particularly at the strategy level (consulting on QI policies) and at the institutional level (capacity building of QI service providers). Its contributions include an inter-regional transfer of good practices as well as the facilitation of a transnational exchange of experts and know-how. The latter is essential since communication and information platforms within regional communities are often underdeveloped and since regional Technical Cooperation activities contribute to confidence-building among member states.

Additional lessons learned in the framework of Technical Cooperation of PTB may be summarized as follows:

- 1. Quality infrastructure – a recognized component of regional integration**

The necessity of QI-related agreements to serve regional integration processes is unchallenged and can even be realized on a small scale in individual product sectors. For that reason, a successful harmonization of standards and conformity assessment may be achieved rather quickly as compared to politically more sensitive issues, such as common foreign or trade policies. That is aided by the fact that QI is essentially shaped by technical specialist institutions of the member states, supported by industry and generally less affected by political turbulences.
- 2. Limits of regional QI approaches**

Regional QI approaches, as well as regional integration as a whole, will show their limits wherever fundamental regional restricting factors or a lack of political support resist a liberalization of trade. That includes the necessary commitment to provide the resources required for the establishment of QI capacities as well as the removal of any fundamental administrative barriers regarding the movement of persons and goods.
- 3. Heterogeneity – both a risk and an opportunity**

The obvious asymmetries between the status of development of the national quality infrastructures of least developed countries, on the one hand, and emerging economies, on the other hand, present a risk as well as an opportunity. Positive impulses provided by threshold countries can be expected in cases where political relations are intact, where there is a clear commitment to regional cooperation, and where comparative advantages are employed. Technical Cooperation can effectively support such endeavors in the form of trilateral cooperations.
- 4. The importance of creating awareness**

The development of institutional capacities in quality infrastructure is a long-term process that requires considerable investments whereas its benefits will often remain invisible – and therefore difficult to exploit on a political level. For that reason, measures that create awareness of the benefits of quality infrastructure are required in order to ensure lasting support and funding. Simultaneously, measures that stimulate the demand for quality services are required, particularly among small and medium-sized enterprises as well as consumers, for instance by establishing independent consumer information.
- 5. The economic dimension of QI**

The establishment of national or regional quality infrastructures is often viewed from a technical point of view. The availability of QI services on a sustainable basis, however, requires the consideration of aspects regarding management and organization as well as economic aspects. Especially in the field of accreditation and conformity assessment, a regional perspective can help to evaluate the market demand more realistically and to establish an infrastructure that focuses on specialization and a complementary division of labor.

6. **Competence centers instead of indiscriminate distribution**
Regional approaches must not be confused with indiscriminate distribution. On the contrary, the establishment of regional competence centers makes particularly good sense in cases where the isolated establishment of a sophisticated national quality infrastructure appears to be of little use due to small markets and a lack of resources. However, when choosing suitable centers, there may be a tendency towards politically motivated interventions that might lead to the advantage of state institutions over private QI providers to the disadvantage of the national economy.
7. **“Regional” is no substitute for “bilateral”**
Regional QI projects cannot serve as substitutes for bilateral programs but rather as supplements. In other words: Bilateral support will be necessary, especially in the case of least developed countries, in order to foster their ability to keep up with international and regional developments. Furthermore, it makes sense to specifically sponsor prospective threshold countries that show the willingness and potential to support weaker neighboring countries and therefore are future candidates for trilateral cooperations.
8. **Linkages with other regional programs**
Linking QI support to regional economic and trade promoting programs can considerably improve their significance and effectiveness. That applies to national and regional programs of the partner institutions as well as to Technical Cooperation. At the same time, it enhances the visibility of QI with respect to decision-makers and contributes to the creation of awareness.

Considering the failure of the current world trade round and the comparative advantages of larger domestic markets, the trend towards regional economic integration is expected to continue. The importance of and the need for the promotion of effective quality infrastructures will therefore increase, especially within a regional context. Technical Cooperation as an advocate of smaller and poorer states can contribute to that process in a variety of ways. Ultimately, however, it is the community of states itself that must desire a QI integration and be committed to it.

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