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# Enabling Enterprise Competitiveness in Latin America and the Caribbean Through ISO Management System Standards

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**Steve Wilson and Octavio Maizza-Neto**

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## TABLE OF CONTENTS

PREFACE .....	4
I. THE COMPETITIVENESS IMPERATIVE: THE RATIONALE FOR IMPROVING QUALITY, STANDARDIZATION, CERTIFICATION, AND ACCREDITATION IN THE SMALL AND MEDIUM ENTERPRISE SECTOR .....	5
II. BUILDING ENTERPRISE COMPETITIVENESS THROUGH CONTINUOUS IMPROVEMENT .....	7
A. QUALITY AND CONTINUOUS IMPROVEMENT AS FOUNDATIONS FOR COMPETITIVENESS .....	7
B. CUSTOMER VALUE AND THE ROLE OF SYSTEMS IMPROVEMENT .....	8
C. THE RELEVANCE OF CONTINUOUS IMPROVEMENT FOR SMES IN LATIN AMERICA AND THE CARIBBEAN .....	10
III. ENABLING CONDITIONS FOR ENTERPRISE COMPETITIVENESS: THE GROWING IMPACT OF STANDARDS, CERTIFICATION AND ACCREDITATION .....	11
A. MULTILATERAL AND REGIONAL APPROACHES WITHIN LAC .....	13
B. STANDARDS DRIFT AND THE CASE OF ISO MANAGEMENT SYSTEM STANDARDS .....	14
C. THE TRIUMPH OF “SOFT” MANAGEMENT SYSTEM STANDARDS: ISO 9000 AND ISO 14000 .....	15
D. ISO 9000:2000 AND ISO 14000: VEHICLES FOR CLEAN AND CONTINUOUS IMPROVEMENT? .....	17
IV. THE MIF PROGRAM OF ASSISTANCE .....	20
A. THE ENABLING CONDITIONS OF STANDARDIZATION, CERTIFICATION, AND ACCREDITATION .....	21
1. Critical needs to be addressed .....	21
2. Strategic Objectives of MIF Technical Assistance Under this Model .....	21
3. Main Activities of MIF Technical Assistance .....	22
B. IMPROVING ENTERPRISE COMPETITIVENESS THROUGH CONTINUOUS IMPROVEMENT .....	22
1. Critical needs to be addressed .....	23
2. Strategic Objectives of MIF Technical Assistance Under this Model: .....	23
3. Main Activities of MIF Technical Assistance Under this Model .....	23

## ABBREVIATIONS

APEC	Asian Pacific Economic Cooperation
BPR	Business Process Reengineering
CP	Cleaner production
EMS	Environmental Management Systems
EU	European Union
FTAA	Free Trade Area of the Americas
HACCP	Hazard Analysis Critical Control Points
IAAC	Inter-American Accreditation Cooperation
IAF	International Accreditation Forum
IDB	Inter-American Development Bank
IESC	International Executive Service Corps
ISO	International Organization for Standardization
LAC	Latin America and the Caribbean
MIF	Multilateral Investment Fund
MLA	Multilateral Agreements
MRA	Mutual recognition agreement
NAFTA	North American Free Trade Agreement
NIST	National Institute of Standards and Technology
QSCA	Quality, standardization, certification and accreditation
SCA	Standardization, certification and accreditation
SME	Small and medium enterprises
SPS	Agreement on the Application of Sanitary and Phytosanitary Measures
TBT	Agreement on Technical Barriers to Trade
TQM	Total quality management
UNIDO	United Nations Industrial Development Organization
WTO	World Trade Organization

## *Preface*

This paper was first presented at a conference sponsored by the Multilateral Investment Fund (MIF) and the Inter-American Development Bank (IDB) to examine the impact of quality and the related issues of ISO management systems standards upon the competitiveness of small- and medium-sized enterprises (SMEs) in Latin American and the Caribbean. A program of assistance to support SMEs in improving their competitiveness through continuous improvement and the cost-effective uses of the ISO 9000 and ISO 14000 standards is introduced. In addition, critical institutional issues in standardization, certification, and accreditation and their impact on competitiveness are discussed. Finally, a program of assistance to strengthen this standards framework is introduced.

The Conference was presented with the technical support and participation of the United Nations Industrial Development Organization (UNIDO), the specialized UN organization dedicated to promoting industry in developing countries as a vehicle for economic growth and environmental responsibility.

## I. The Competitiveness Imperative: The Rationale for Improving Quality, Standardization, Certification, and Accreditation in the Small and Medium Enterprise Sector

- 1.1 Enterprise managers in small and medium-sized enterprises (SMEs) in Latin America and the Caribbean (LAC) face a potent mix of opportunities and challenges.<sup>1</sup> The uneven, but steady trend towards greater economic integration within the region, and accelerating trade and investment flows both between LAC and the rest of the world offer entrepreneurs and managers great opportunities for new markets, fruitful partnerships, and sustained growth. However, gaining access to markets demands improved enterprise performance in a number of key areas.
- 1.2 Firms must be able to deliver high quality goods and services on time and in the correct quantities – all at competitive prices. Moreover, SMEs and their staff are faced as never before with a range of international standards which are increasingly required for access to international and regional markets, and are now demanded by a growing number of large domestic buyers, including governments. Foremost among these are management systems standards related to quality and the environment. Other standards related to labor, health and safety are also projected to grow in importance. Enterprise competitiveness - so critical to the success of market systems in LAC countries - now requires greatly improved performance in critical areas such as product and service quality, costs, and delivery times - plus conformity to management system standards such as the ISO 9000 quality and ISO 14000 environmental series.
- 1.3 The ISO 9000 and 14000 management system standards are based on processes rather than products, and are applied at the level of entire enterprises. ISO 9000 and 14000 were devised by the International Organization for Standardization (ISO) to help build enterprise *capacity* in quality and environmental management systems. Conformity to these standards certifies that an enterprise has put in place a documented quality or environmental management system and can demonstrate this through subsequent surveillance. Conformity does not certify the quality of products, process or environmental performance, but can provide buyers with greater confidence because they know that a system is in place, which in turn implies the discipline to implement and maintain such a system.
- 1.4 The current pattern of demand for ISO 9000 and 14000 certification in LAC and elsewhere reveals that *market access* has become the prime objective for enterprise managers. ISO 9000, and to a lesser extent 14000, are now demanded by a growing number of large buyers and some governments in LAC and elsewhere. However, there remains a lack of knowledge and information regarding when ISO management system standards are required for export, and further, what these standards are and what they actually deliver. Many managers in SMEs are now convinced that that ISO 9000 is a

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<sup>1</sup> Small and medium enterprises (SMEs) are defined as companies with less than 100 employees and less than US\$3 million in annual revenue.

prerequisite for entering export markets. This may or may not be true, depending on the sector and the market in question. In reality, SMEs may face more immediate market obstacles, such as requirements for eco-labels or health and safety practices. Confusion among managers leaves SMEs vulnerable to inappropriate and costly certification, while poorly informed policymakers may adopt these standards in whole or in part with little attention to their benefits or costs.

- 1.5 Most SMEs in Latin American and the Caribbean are ill equipped to meet the requirements of these standards. Many have had little or no experience with quality or environmental management systems. Managerial experience with documentation may be slight at best, as witnessed by rudimentary or non-existent accounting and production-related documentation systems. For such firms the drive for competitiveness must begin with the most fundamental approaches to workplace improvement and housekeeping. However, ISO 9000 and 14000, when implemented in a prudent and cost effective way, can be very useful guides when beginning a program of continuous improvement of product quality and production processes.
- 1.6 SME competitiveness is further weakened by a low capacity in the institutional standards framework of many LAC countries. Certification (or registration) and accreditation are vital parts of this framework. For example, demonstrating conformity to a management system standard such as ISO 9000 requires that a third party certification body<sup>2</sup> grants a certificate which signals that an enterprise has met all relevant requirements of the standard. This system works so long as the certificate is accepted in the market place. However, a major problem arising in many LAC countries is that the certificates issued by local certification or standards bodies are not accepted by buyers in regional or global markets. This certificate is of little use to the SME wishing to compete beyond the frontiers of his or her country. This occurs because the local certification body is not accredited by an internationally recognized body, thus diminishing the value of its certificates. Improving accreditation bodies in turn requires attention to the entire “conformity assessment” framework, which involves certification and accreditation bodies, quality system registrars, and testing laboratories and metrology systems within a country.
- 1.7 Institutional capacity must be built through training and upgrading on the one hand, and international market access gained through mutual recognition agreements (MRAs) and Multilateral Agreements (MLAs) which allow acceptance of certificates across borders, on the other. This process includes domestic capacity building as well as the task of forging and strengthening regional and global networks and alliances among stakeholders in quality, standardization, certification and accreditation (QSCA). Strengthening the “enabling framework” of standardization, certification, and accreditation supports SME competitiveness. Moreover, this process will enable stakeholders within LAC to increase their participation in the development of standards and conformity assessment systems.
- 1.8 Section II of this paper describes the underlying principles of continuous improvement and the major implications of this approach for enterprise competitiveness. Section III

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<sup>2</sup> Second party registration or certification involves the process of a buyer directly certifying supplier.

discusses the critical - though not always obvious - impact that standards, certification, and accreditation have upon the competitiveness of SMEs, market access, and economic growth. Section IV discusses the Multilateral Investment Fund: its funding mechanisms, and its intended program of grant assistance to both strengthen the enabling QSCA institutions in the region and to enhance competitiveness of SMEs through continuous improvement and the optimal implementation of ISO 9000 and 14000 system standards.

## II. Building Enterprise Competitiveness Through Continuous Improvement

### A. *Quality and Continuous Improvement as Foundations for Competitiveness*

- 2.1 Policies aimed at improving governance, providing stable legal and financial frameworks and prudent attention to the macro economy have been seen as essential to the task of promoting the emergence of robust market systems in Latin America and the Caribbean. However, it is increasingly evident that such policies do not always elicit the intended supply-side response in the form of increased enterprise competitiveness. Yet the ability of enterprises to survive and grow in the face of competition - i.e. to be competitive - is ultimately where the battle for “national competitiveness” is won or lost.
- 2.2 Management is perhaps the key variable among the many that influence enterprise competitiveness. It is management that is responsible for creating competitiveness through the ability to produce ever-higher quality at lower cost. The central role of quality is not new, having become part of the vocabulary of business since the phenomenal export success of Japanese and other Asian manufacturers in the 1970s and 1980s.
- 2.3 The success of quality movement can be seen by the degree to which many of its key principles have been internalized in the world’s most successful firms. However, there do remain key differences in approach among practitioners. For example, Total Quality Control in Japan has long stressed ongoing incremental improvements to all aspects of a process. In contrast, “Business Process Reengineering,” (BPR) advises rapid, radical changes - stressing the immediate financial gains and process efficiencies over the longer term improvement of quality.<sup>3</sup>
- 2.4 While doctrinal disputes persist, the quality improvement literature reveals a core of shared principles – from various schools of TQM to “World Class Manufacturing.” These include the following tenets: (a) Top management bears the major responsibility for quality improvement; (b) improvement should be focused on improving customer satisfaction; (c) improvement is usually difficult and requires intense effort, time and discipline; (d) efforts should be made on system-wide and continuous improvement; (e) managers and employees must be trained in analytical methods and tools which are used

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<sup>3</sup> Improving quality and cost in SMEs can require both radical and gradual approaches. A complete overhaul may be necessary, for example, to set the stage for longer-term continual improvement. However, reengineering is often costly in terms of outside expertise, equipment, and production downtime. These costs can go beyond the means of SMEs. Moreover, radical changes run the risk of leading managers to believe that their problems are solved; one reason such “great leaps” often stagnate is that managers turn their attention elsewhere after the changes.

to cut waste and cost, and to improve processes, products and services; (f) all members of an organization, including customers and suppliers where applicable, should be part of quality improvement programs; and (g) barriers between departments and functions should be removed to allow employees to share information and collaborate on improvement initiatives.

- 2.5 “Continuous improvement” expresses the core principle underlying most quality improvement programs and is central to enterprise competitiveness. The concept now forms a major part of the revised ISO 9000:2000 quality management system.<sup>4</sup> Continuous improvement is a process whereby management utilizes all human resources and relevant information to produce a constant stream of improvements in all aspects of customer value. This continual flow of improvements includes many attributes such as quality, functional design, timely delivery, and more - without sacrificing low cost. The dual objectives of ever-higher customer value at lower costs make this a formidable approach to production - and also one that requires much effort to attain.
- 2.6 While continuous improvement is most advanced in the world’s leading industrial and service firms, key aspects of this approach are relevant for SMEs in developing countries. Extensive research at UNIDO and elsewhere suggest that these principles have been successfully implemented in SMEs in Latin America and other developing regions (Wilson, 1996). A key aspect of this approach is its ability to continually increase the quality of goods and services. Quality is defined by engineers as the conformity of a product to some set of specifications, while others define quality by the ability of a product to “meet or exceed the requirements of the customer.”

### *B. Customer Value and the Role of Systems Improvement*

- 2.7 In practice, the world’s most competitive firms simultaneously address both aspects of quality by aligning all technical activities in such a way as to produce a continuous flow of value to the customer. Customer value is the total value a person gains from the use of a product or service, less what he or she must give up in order to use, acquire, or dispose of it. Price is only one sacrifice made to obtain and use a product. Customer value includes price as well as a range of non-price sacrifices associated with a purchase. These include the costs in time and money for repairs and maintenance, risks and problems associated with using a product, time spent learning to use or purchase a product, or after-sales service and information - among other costs. Customer value is based on the observation that buyers usually make relative comparisons based on a combination of price and other attributes. For the producer the logic is clear: there is usually some way to improve customer value. Even in agricultural and primary commodities where price competition is paramount, there remains scope for producers to increase the flow of customer value (i.e. to reduce non-price sacrifices) as part of their competitive strategy.

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<sup>4</sup> The ISO 9000 series of quality management system standards were issued by the International Organisation for Standardization (ISO) in 1987. These constitute one of most rapidly adopted process standards of all time, and are increasingly encountered as requirements for market entry. They were revised in 1994 and new revisions will be issued in the year 2000.



- 2.8 Managers of competitive enterprises hold the continual improvement of customer value among their strategic objectives. Every production system is made up of individual processes, and it is management's objective to ensure that each of these activities or processes adds customer value. These processes could include all activities from design to after-sales customer service. Managers can create and improve upon customer value in several ways. Foremost, every effort must be made to understand the customers' expectations. Then production processes must be aligned to deliver satisfaction to customers. A wide range of tools can help managers and workers to improve processes. These "soft technologies" include the way management captures and uses information, the organization of the workplace, and analytical tools such as statistical process control (SPC) which are used to reduce costly variation and defects within processes, among a host of other tools. Many of these soft tools are extremely simple and easy to use.
- 2.9 Improving customer value comes about as a result of the discipline and knowledge of managers and the use of a variety of soft technologies. Better known "hard technologies," such as capital equipment, including information technology in the form of computers and software, are clearly essential to modern production. But as revolutionary as these new hard technologies are, they have not yet replaced the need for human understanding of process improvement and concrete problem solving. Continuous improvement, therefore, is about using all available soft and hard technologies available to understand and improve a production system.
- 2.10 The great competitive strength of continuous improvement lies in its ability to deliver greater customer value at lower cost than competitors. Process improvement rigorously reduces every form of waste - and therefore costs - while increasing the quality of goods and services. The continuous improvement approach to production arose within manufacturing, but this logic is now being applied in all kinds of service industries, from health care to education (Gyrna and Gyrna, 1999; Lopa and Marecki, 1999; McCamey et al., 1999). When managers and their staff learn to use analytical tools such as statistical process control, fishbone diagrams, and the like to identify and remove the internal sources of problems, they generate important site-specific data which can be used to improve task performance, the organization of the workplace and product and process design.
- 2.11 Over time, mistakes and various forms of rework decline and permit tighter specifications for products, thus reducing product-related problems inside the enterprise and in the hands of the customer. Costs for inspection, rework, and inventories decline, with an improved flow of value to the customer.
- 2.12 As a firm reduces costly variation, waste, and defects through continual improvement, less inputs are required for a given full-capacity output. From the standpoint of conventional measures, such as output per worker or cost per unit, continuous improvement can be seen as an important source of productivity. But it is more than that because as an enterprise generates a stream of internal improvements the volume of effective (or non-defective)

output increases, while costs continue to fall. This leads to a maxim of continuous improvement: the best producer of customer value is also the lowest cost producer.

- 2.13 The soft technologies of continuous improvement effectively increase capacity, customer value, and cut costs - all with the same fixed capital and no change in the speed of people or machines. In addition, continual internal improvements give managers in manufacturing and service industries a wide range of economically viable options in terms of product and quantities, marrying the low unit costs of the large producer with the flexibility of the small enterprise (Cole and Mogab, 1996). This has led to a new measure of process efficiency which incorporate product quality (Wilson, 1999).

### *C. The Relevance of Continuous Improvement for SMEs in Latin America and the Caribbean*

- 2.14 SMEs in Latin America and the Caribbean face significant operating constraints – some of which are beyond the control of management. SMEs are typically under-capitalized and have old or inadequate equipment. Many face high input prices, inadequate infrastructure, and undeveloped marketing and distribution chains. How can advanced methods work under such difficult circumstances? No approach to production is a panacea, but there are several reasons why continuous improvement offers SMEs a very cost-effective way of improving their competitiveness.
- 2.15 First, disciplined management is the key variable in any enterprise, and is among the scarcest resources anywhere. Latin America has made significant strides in producing well-trained engineers, management specialists, and business specialists. This is the raw material for the management pool which must drive the process of continuous improvement by mastering the use of various soft technologies to harness the skills, knowledge, and creativity of all those working in the firm.
- 2.16 Secondly, the soft technologies of continuous improvement are not scale-specific – they can help create customer value in any enterprise, of any size, in any sector. Continuous improvement can drive down break-even points for SMEs while improving quality – thus presenting the possibility of targeting new growth and niche markets in LAC. This approach is also valuable in economies characterized by slow growth because it is effective for reducing costs, which is often easier to achieve in the short run than raising revenue.
- 2.17 Third, continuous improvement saves expensive capital equipment through “total productive maintenance” and other techniques, which extend the useful life of machinery and reduce costs and defects due to fewer equipment failures and reduced down time. Fourth, progress is endogenous to the firm in that it relies on managers and all members of the enterprise for most improvement. A production system, which can continually increase customer value, is also a potent form of proprietary technology, which can be difficult for competitors to copy and implement. Fifth, continuous improvement stimulates a new form of learning in production. In which management is able to exploit site-specific information and channel this into a steady stream of improvements in cost and customer value (Schramm, 1998).

- 2.18 Sixth, SMEs engaged in continuous improvement are better prepared to enter into a range of partnerships and supply arrangements with other local and global firms. Global outsourcing in its varied forms is growing at an exponential rate. Such production has often been associated with low wage assembly (or “maquiladora”) operations, but the world’s largest firms are increasingly subcontracting out core manufacturing operations, not to mention a growing numbers of services. Managers with a good understanding of the principles of continuous improvement will also be better able to adopt the ISO 9000 quality management system standards (which are now often required by large buyers) in a cost-effective and value-adding way.
- 2.19 The promotion of “leanness” in production draws some criticism that quality improvement programs are labor displacing and therefore ill-suited for countries suffering from high levels of unemployment and under-employment. It is true that process improvement cuts the number of tasks associated with inspection, rework, and waste, but assuming that managers are seeking to be competitive (i.e., to retain profits, reinvest and grow) then workers trained in continuous improvement methods will be shifted to other activities that more directly add customer value.
- 2.20 It is equally true that some companies have used “quality improvement” programs as a way of shedding labor. However, the strategic implementation of continuous improvement leads management to view labor as a source of “retained learning” within the firm – rather than as a simple cost of production. To the extent that continuous improvement becomes common in a sector, and in an economy as a whole, the net effect upon aggregate employment (as suggested by a sustained increase in productivity) is likely to be positive. A growing pool of management and labor with improvement skills becomes a source of national and regional strength, not only enhancing local business start-ups, but proving an attractive resource for a wide range of regional and international partners (Wilson, 1998).

### III. Enabling Conditions for Enterprise Competitiveness: The Growing Impact of Standards, Certification and Accreditation

- 3.1 Accelerating flows of trade, foreign direct investment and global production sharing confront small and medium sized enterprises in LAC with a mix of challenges and opportunities. Among these is the need to demonstrate compliance with a growing range of international standards and technical regulations. Increasingly, large buyers, industrial partners, and potential investors demand evidence of compliance with international standards. Those countries that have invested over the years in strong standardization and metrology bodies can meet these standards, and will correspondingly be able to trade and attract investment. Unfortunately, the capacity to meet standards remains weak in many LAC countries. With the possibility of new international standards in occupational health and safety, this lack of capacity will leave many of these countries further behind in their struggle to promote economic development and competitiveness.

- 3.2 A standard is a document approved by a recognized body, which recommends voluntary rules and guidelines concerning the characteristics of products, processes or methods. Standards promote trade and commerce by transmitting information in a consistent way and permitting comparisons of products and services. Moreover, standards allow for economies of scale, promote the efficient use of parts and components in production, facilitate the diffusion of technology, and can promote product quality and safety and environmental cleanliness. In contrast, technical regulations are standards, which are prescribed by regulatory authorities and for which compliance is mandatory. Conformity assessment procedures include a broad range of activities such as inspection, testing, certification, quality and environmental management system registration and are used to determine that the relevant requirements in standards and technical regulations are fulfilled.<sup>5</sup> It is useless to comply with a standard if the costs of demonstrating compliance to buyers are prohibitive.
- 3.3 Standards and technical regulations are essential to trade, commerce, and the diffusion of technology. Rapid liberalization drives the demand for the harmonization and adoption of international standards and related procedures, as does the desire to contain the global consequences of environmental degradation. Yet participation by several LAC countries in the international standardization process remains low, and the costs in foregone trade and investment have only recently been a matter for policy discussion. For several smaller countries in LAC, standards compatibility and conformity have only recently become important issues. One reason for this is that standards have not played major roles in the raw material and primary commodities sectors, which have dominated the export structure of such countries.
- 3.4 Yet standards, technical regulations, and related procedures can also act as non-tariff barriers to trade in several ways. More than the standards themselves, it is the duplicative testing procedures arising from differing systems in different countries that have become serious barriers to trade. Widespread failure to accept test results and certifications conducted by foreign organizations operating in multiple markets adds costs and presents a serious obstacle to market entry. "Tested once, accepted everywhere" is a welcome goal of conformity assessment, but will only come about as a result of mutual recognition agreements (MRAs) and Multilateral Agreements (MLAs) to accept the test results of signatories. These agreements in turn depend on national, institutional and enterprise capacities, which are beyond the reach of several LAC countries. A conformity assessment framework involves testing laboratories, meteorological laboratories, certification and accreditation bodies, and quality system registrars, all of which require dramatic improvement in many LAC countries.
- 3.5 Other standards-related barriers have little to do with technical capacity. For instance, in most countries, there remains unequal access to certification and testing systems and methodologies between domestic producers and exporters in most nations. This can be a powerful impediment to trade. Differing national standards can also protect domestic producers when restrictive standards are used to match the design features of domestic

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<sup>5</sup> The terms, registration and certification tend to be used interchangeably in the standardization literature.

products - rather than essential performance criteria (NRC, 1995). Moreover, a general lack of transparency in systems for developing standards, technical regulations, and assessing conformity in most countries remains widespread (Maizza-Neto, 1997; Pataconi, 1997; Wilson, 1999).

#### *A. Multilateral and Regional Approaches within LAC*

- 3.6 The World Trade Organization (WTO) Agreement on Technical Barriers to Trade (TBT) and the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) provides a legal framework for trade disputes involving standards and related issues. The TBT is generally limited in its scope of enforcement, often using non-binding language to encourage government compliance. For instance, with regard to conformity assessment procedures, the Agreement only encourages acceptance of test results or laboratory accreditation.
- 3.7 Importantly, the TBT promotes mutual recognition agreements, which codify the acceptance by each member state of the standards, regulations, and certification procedures of other members. MRAs reduce costs through the elimination of expensive third party registration and redundant testing procedures, but under the TBT there is no enforcement mechanism for non-cooperation in terms of MRAs. Currently the TBT does not apply to management system standards such as ISO 9000 and ISO 14000.
- 3.8 Most progress in the harmonization of conformity assessment and in MRAs has occurred within regional initiatives, such as the European Union (EU), Asian Pacific Economic Cooperation (APEC) group, the Free Trade Area of the Americas (FTAA) and the North American Free Trade Agreement (NAFTA). In addition, bilateral negotiations among major trading partners are addressing MRAs. It may be that regional initiatives, and to a lesser extent bilateral negotiations, such as a recent MRA between the U.S., and the EU on conformity assessment of testing procedures for six major sectors, are more promising avenues for progress on mutual recognition than the multilateral approach of WTO.
- 3.9 There have been a large number of initiatives in support of quality improvement, standardization, certification, and accreditation in LAC over the past two decades. The Desk Study prepared for the MIF by the International Executive Service Corp (IESC) entitled, "An Assessment of Institutional Capacity for ISO 9000 and 14000 Series Standards in Latin America and the Caribbean (LAC) Region" reports a great diversity of capabilities in standards and related bodies in LAC (IESC, 1999). The data collected in the recent U.S. National Institute of Standards and Technology (NIST) study on the conformity assessment infrastructure within the FTAA also confirms the same wide variation within the region (Londoño, 1999).<sup>7</sup>
- 3.10 Despite the numerous initiatives in LAC, most have lost momentum due to lack of funding. This is a serious problem given that the major obstacle to mutual recognition

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<sup>7</sup> In some aspects LAC countries are similar in their orientation towards the standards framework. For example, only a few of the 33 members of FTAA, which are signatories to the TBT, have established required enquiry points in their countries.

agreements for LAC countries remains a shortage of institutional and human resource capacity to meet and prove conformity to standards requirements. Compounding matters further is the widespread confusion and lack of information and awareness on the part of decision-makers in both government and at the level of industrial associations and enterprises about standards and related issues in certification and accreditation.

### *B. Standards Drift and the Case of ISO Management System Standards*

- 3.11 Another trend with important implications for developing countries is the blurring of the line between voluntary standards and mandatory technical regulations. For instance, in many countries' products not in compliance with national standards can still be sold. However, if these goods meet the national standard the producer is entitled to use a standards mark. This often reassures customers and increases sales. Thus, over time a "voluntary national standard" becomes mandatory, de facto, for the producer wishing to survive. The confusing term "mandatory standard" is often used to refer to procurement specifications manufacturers require of their suppliers. These are only voluntary in the sense that no supplier is forced to do business with any large manufacturer. When governments borrow text from private sector voluntary standards to create technical regulations, they often use the term mandatory standards. The drift of voluntary standards into government-administered technical regulations (or "mandatory standards") occurs because many standards cry out for enforcement. The greater the need and demand for enforcement, the faster standards become technical regulations.
- 3.12 Given the drive to internationalize standards, the blurring between voluntary and mandatory standards can have important trade implications for developing countries. For example, one of the fastest growing international standards is the ISO 9000 series for quality system management. This has been adopted by over 150,000 firms (mostly medium sized) in over 90 countries. ISO 9000 does not certify products, or even specific processes, but seeks to certify a quality management system of specific enterprises. ISO 9000 does not recommend a specific quality system, but only that one be put in place that can be verified through extensive documentation. While ISO 9000 is formally voluntary, it has become, for all practical matters, a "mandatory standard." The European Community adopted ISO 9000 as part of its Global Approach to Testing and Certification in 1989. A major problem for developing countries and countries with economies in transition is that only ISO 9000 certificates awarded by recognized international firms are internationally accepted. And because conformity assessment requires proof of compliance to ISO 9000 in all stages of the production chain, documentation and auditing costs are beyond the financial resources for the vast number of SMEs in Latin America and the Caribbean.
- 3.13 ISO 14000 was introduced in 1996 as a new environmental management systems standard and entails many of the same costs of training, monitoring, documentation and auditing incurred with ISO 9000 implementation. ISO 14000 does bear additional costs in terms of the new technology enterprises would have to procure in order to comply with this standard. In common with ISO 9000, the 14000 series implies that improved environmental performance will result after the implementation of an environmental

management system. The oft-repeated criticism of ISO 9000, namely that it is more about good documentation than good quality is leveled at ISO 14000 with respect to environmental quality. Despite the criticisms, pressure mounts on enterprises in developing countries to achieve certification in ISO 14000 - often in tandem with ISO 9000.

*C. The Triumph of “Soft” Management System Standards: ISO 9000 and ISO 14000*

- 3.14 One of the most useful aspects of standards is that they provide consumers and producers with useful and predictable information concerning relevant characteristics of products, testing methods and services. The role of measurement is critical for determining that a “hard” standard embodies these expected characteristics. Accurate measurements signal conformity to a hard standard and in turn signal precise and universally understood information.
- 3.15 However, universal metrics to determine the conformity to a “soft” standard such as ISO 9000 and ISO 14000 do not exist. These standards do not signal precise information regarding products, processes, services, quality, environmental impact, or methods. Unlike a product standard which must meet precise and measurable specifications, certification to ISO 9000 or 14000 requires no adherence to standardized technical blueprints. For this reason, ISO 9000 and ISO 14000 more closely resemble a set of guidelines or principles rather than standards in the hard sense.
- 3.16 Some may object that these management system standards do, in fact, contain an exhaustive set of requirements, which all firms must meet. However, in practical application, ISO 9000 and 14000 can be very flexible and adapted to a firm’s special circumstances. It is this very flexibility which permits certification of such a wide range of enterprises, regardless of the size or the type of business. The key requirements of ISO 9000 and 14000 are captured in the popular expression “write down what you do, and do what you write down.” In essence, a documented quality management system must be in place, and its implementation must be verified through subsequent surveillance.
- 3.17 To date, there does not exist a body of comparable data that can lend weight to the many anecdotal stories from managers concerning how ISO 9000 improved quality and performance. While it is undoubtedly true that ISO 9000 is an important improvement tool when used correctly, certification by itself does not tell an observer much about actual performance. This does not mean that these standards have little value. On the contrary, certification – particularly to ISO 9000 – does provide a degree of confidence to large buyers. This confidence, however, does not release a firm from the demonstration of conformity to any product standards (or other hard standards) or other requirements.
- 3.18 MIF technical cooperation to promote the use of these standards is based on the premise that ISO 9000 and 14000 provide a comprehensive structure - particularly for SMEs at the beginning of a program of quality and environmental process improvement. However, ISO 9000 and 14000 are only as effective as the commitment of enterprise management to continuous improvement. Otherwise, they often become static ends in

the form of improved visibility and a “seal of approval” for market access. If managers do not understand what these standards are and what they can deliver, they may receive inappropriate advice and consultation. This lack of knowledge can lead to excessive documentation systems at enormous costs for SMEs. For these reasons, MIF technical cooperation takes the view that ISO management system standards are to be used by SMEs as tools of continuous improvement – and not as an ends in themselves. This will require manager training in ISO 9000 and 14000 and in the methods of continuous improvement.

- 3.19 The lack of a standardized approach to implementing soft standards is a paradox. This has led to efforts by ISO to standardize the auditing process for quality system registration, and several certifying bodies have tried to “calibrate their auditors” to ensure uniformity in practice. But in the absence of unambiguous measurements to assess conformity, the fact remains that third party registrars and many consultants hold different ideas concerning the correct and proper implementation of ISO 9000. Therefore, experienced auditors with similar training can reach different conclusions regarding conformity to ISO 9000.
- 3.20 While improving enterprise capacity was the prime reason for the development of the original ISO 9000 series of standards in 1987, it (and to a lesser extent 14000) has since been adopted as a requirement by large buyers and some governments.<sup>8</sup> Market access has now become a prime motive for enterprise managers seeking certification (UNIDO, 1997). Continual marketing efforts on the part of some consultants in LAC have convinced many managers that ISO standards are solely about increasing exports. Many government officials who see ISO 9000 as a key ingredient to a nation’s export success also share this perception. In rare cases do these officials refer to any data revealing which countries and sectors require ISO 9000 (or 14000) certification from producers in their own country. In some LAC countries major determinant of demand for ISO 9000 emanates from government ministries that incorporate the standards into regulations, or make government contracts conditional on conformity.
- 3.21 These trends could be seen as a positive development because they force enterprises to implement documented quality and environmental management systems. If this leads to lasting internal improvements then no harm is done. However, such trends do reinforce the view that ISO 9000 and 14000 are a means to an end – a “ticket for admission” - into global, regional, or domestic markets. Anecdotal evidence abounds that for numerous firms, certification to ISO 9000 and 14000 are mostly about image and market entry. For instance, there are numerous instances of firms charging certification expenses to advertising budgets and using ISO 9000 or 14000 in advertising with language which suggests the company has demonstrated “high quality” or “environmentally responsibility” and the like.

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<sup>8</sup> The impact of a large buyer mandating certification to ISO 9000 can be large. For example, in 1992 only 36 companies in Brazil were certified to ISO 9000. Then Petrobras, the state-owned petroleum company – with many suppliers – imposed the requirement for 9000 certification. By 1997 the number of enterprises certified to ISO 9000 in Brazil had grown to over 1700 (Lima de Oliveira, 1999).



- 3.22 While the majority of auditors and registrars operating in LAC are ethical and committed to helping enterprises, it should come as no surprise that abuses will occur in those situations where enterprises view certification as a means to quick market access. And despite the good efforts of ISO and regional and national standards bodies, fundamental misperceptions persist regarding standards in LAC. Given such widespread misunderstanding there is room for further unethical practices on the part of consultants and others involved in ISO management system standards. Stories abound in LAC and elsewhere of auditors and registrars who guarantee certification to ISO 9000 within ninety days, or even sell certificates.
- 3.23 However, even where efforts are in good faith, the degree of variation within the entire certification process creates an unstable process and reduces further the already weak signaling properties soft standards such as ISO 9000 (Munro, 1999). Moreover, the variation and lack of process controls within LAC and elsewhere run the risk of subjecting third-party registrars to an increasing discount rate in the private sector. Without the controls to ensure integrity and consistency on a global basis, there is the very real risk that industry will drift back to second-party audits between the buyer and seller and to customer-specific standards (Reid, 1999).

*D. ISO 9000:2000 and ISO 14000: Vehicles for Clean and Continuous Improvement?*

- 3.24 Over the past twenty months numerous national task groups have spent countless hours reviewing the contents of the proposed ISO 9000, 9001, and 9004 standards. One result is that the ISO 9002 and 9003 standards have been eliminated. Another round of comments and revisions is due in autumn of 1999, but it appears that the fundamental structure of the new standard currently termed ISO 9000:2000 has emerged. ISO 9001:2000, the most important standard of the series, is now renamed “Quality Management System” and places more emphasis on the role of continuous improvement and customer satisfaction than the previous 1994 version.
- 3.25 Several of the new revisions within ISO 9000:2000 appear designed to answer nagging criticisms since the last round of changes in 1994. Among these are language and a structure that stress the role of continuous improvement in the newly revised standards to be adopted in 2000. The familiar twenty paragraph structure of ISO 9001 has been reorganized into four major paragraphs inspired by the well-known “plan, do, check, act” process model – a familiar tool of continuous improvement. Countering criticisms that ISO 9000 is most appropriate for large organizations, the latest 9001 revisions stress that this standard is generic and applicable to all organizations irrespective of type or size.
- 3.26 One of the most important improvements of the proposed ISO 9000:2000 is the addition of a requirement aimed at monitoring and reviewing customer satisfaction and dissatisfaction. Other important changes which address the critics include the need to establish objectives for each relevant function within the organization, the need to monitor or measure various processes for the purpose of improvement, and the need to perform reviews to evaluate the need for changes in an organization’s quality

management system. In addition, the revised standard is more closely aligned with ISO 14001 (Lamprecht, 1999).<sup>9</sup>

- 3.27 The 9000:2000 revisions are seen as major improvements by many practitioners and stakeholders in the standards arena. Some see the new revisions as offering a greatly improved management tool that will promote continuous improvement – particularly through its role as a catalyst for the flow of information and knowledge. In particular, it is argued that the new revisions will facilitate the flow of information through supply chains and provide the skills to practice knowledge management (Zuckerman, 1999). Others believe the 2000 revisions will make the standard adaptable for all types and sizes of organizations thus demonstrating to a growing number of organizations the value of a management systems approach which institutionalizes best practices that flow from continuous improvement (DeVries, 1999). Some believe that the improved fit of ISO 9001:2000 with ISO 14001 sets the stage for organizations to begin the process of integrating quality, environmental and other management system goals and objectives. (Caillibot, 1999).
- 3.28 Some observers, such as the noted quality expert Joseph Juran, applaud ISO 9000 for providing one set of international standards by which suppliers can have their quality systems audited by customers, but urge more research on the entire subject.<sup>10</sup> Of special importance, is the observation that the ISO series of standards provide a valuable set of guidelines for enterprises at the beginning of their quality journey (Juran, 1999). This is encouraging for the majority of SMEs in Latin America and the Caribbean and underscores the MIF approach to initiatives in ISO 9000:2000 and 14000 certification.
- 3.29 In 1996, ISO introduced the 14000 series of standards to address organizational environmental management. Only one of the ISO 14000 series standards, ISO 14001 Environmental Management System (EMS) specification, is certifiable through a formal third-party process. The rest are guidance documents that do not specify requirements for certification. Thus, “ISO 14000 certification” is a misnomer, since strictly speaking, only ISO 14001 certification exists.
- 3.30 The ISO 14001 EMS standard uses fundamentally the same approach as ISO 9000, in that conformity to the standard signals only that there is a documented environmental management system in place. Moreover, the same conclusions apply to this standard as well, in that it is only as good as the management system in the SME, training, consultants, certification bodies and the like. And similar to ISO 9000, this EMS standard

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<sup>9</sup> There does not appear to any move currently towards merging the ISO 9000 and 14000 series, however, there are several in the standards and business communities who support this as a cost-effective way of achieving these standards (Bice, 1999; Block, 1999).

<sup>10</sup> There have been several attempts to collect data through surveys and interviews. The methodologies employed do not yield statistically comparable data. However, it must be noted that while this kind of anecdotal research may not lend itself to statistical analysis, it is often quite valuable when combined with other information. Most studies reflect a wide variance in opinions held about managers in regards to ISO 9000. However, there is much agreement that ISO 9000 is a useful tool for cost cutting (See Irwin Publishing, “The ISO 9000 Survey, comprehensive data and analysis of registered companies in the United States and Canada,” Burkridge, Illinois, 1996).

draws criticisms from several environmental interest groups that ISO 14000 does not impose more stringent performance requirements upon enterprises (Block, 1999).

- 3.31 So far, approximately 8,000 “organizations” from around the world including industrial plants, corporate headquarters, and government agencies, have received ISO 14001 certification. By far the largest number of certifications occur in Japan and Europe, which together account for close to half of the total certifications. In Latin America, approximately 180 organizations have obtained certification, with the largest number occurring in Brazil (88), Argentina (60), and Mexico (47).<sup>11</sup> There are clear indications that the pace of certification will increase. For example, several major corporations such as General Motors, IBM, and Xerox have recently announced that they will require ISO 14001 certification or its equivalent of their first-tier suppliers, causing certification to become a competitive issue for companies seeking to become or remain suppliers to major international corporations.
- 3.32 The evidence that ISO 14001 improves performance is, at this point, strong but still anecdotal. Many companies that have put in place an EMS report that an EMS improves performance for such areas as: (i) improved compliance; (ii) greater attention given to previously uncontrolled environmental sectors; (iii) process changes to reduce energy and material consumption; and (iv) improved materials handling. In addition, some national and state governments in different parts of the world are considering granting regulatory benefits to companies that have obtained ISO 14001 certification.
- 3.33 In addition, where management has a clear comprehension of ISO 14000 and applies it in the most cost-effective manner, the introduction of cleaner production (CP) methods is made easier. Cleaner production and quality improvement both address process improvement within an organization. In terms of quality management the goal is to improve marketed outputs of goods or services. In cleaner production, the goal is to reduce non-marketed outputs (in the form of pollution or “bads”) through both enhanced process efficiency and the conversion of wastes into marketable outputs. Both approaches are about process efficiency, and if used correctly ISO 14000 facilitate the implementation of CP while also improving economic performance. Both approaches can be maximized within a system of continuous improvement.
- 3.34 The costs to the enterprise of certification has long been a source of concern regarding both ISO 9000 and 14000. ISO 9001:2000 is a lengthier document than previous versions, which could lead to greater initial costs – particularly for SMEs (Lamprecht, 1999). Data suggests that for SMEs the costs of certification are proportionately higher than for larger organizations. The payback period is also longer for SMEs (ECLAC, 1997; Irwin, 1996). Auditors from internationally accredited certification companies typically charge from US\$1,000 to \$1,500 per day, while training and diagnostics consultants cost from US\$2,000 to \$4,000 per work-week. These costs are well beyond the resources of most SMEs in LAC.

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<sup>11</sup> Gergely Toth, KÖVET-INEM Hungária, June 1999

- 3.35 Mutual recognition of certificates issued by local bodies will drive down the cost of internationally acceptable certificates. However, this depends on credible capacities in quality, standardization, certification, accreditation and metrology. These levels are years away for several LAC countries. Building capacities in these enabling institutions provides an important foundation for enterprise competitiveness. The variation in the QSCA framework in LAC can be seen in the differing levels of training and capacity in various bodies across the region, as well as in the number of certificates issued in each country. The distribution of certificates in ISO 9000 reveals vast differences in the level of development of the quality and standards framework in the Americas. For example, Brazil has over 1700 organizations certified to ISO 9000, while Honduras has only two (Lima de Oliveira, 1999; Loesener and Wipplinger, 1999).
- 3.36 At the enterprise level, innovative forms of technical cooperation can lower the costs of certification to ISO 9000 and 14000 through cost sharing, extensive training and intensive preparation up to a pre-audit. Preparing for eventual certification, while at the same time implementing systems of continuous improvement allows SMEs to improve their quality and business performance – or capacity – while preparing for certification which will enhance market access.

#### IV. The MIF Program of Assistance

- 4.1 Implementing programs to improve enterprise quality and the standards-related framework in LAC supports the principal mandate of the MIF, which is to promote private sector development in the region. The MIF is a special \$1.3 billion grant and investment fund, administered by the Inter-American Development Bank. It was launched in 1993, receiving pledges from 20 countries, including the United States and Japan (US\$500 million each) and Spain (US\$50 million). By 1997, 24 countries had deposited contributions and 26 countries had become eligible for MIF assistance. As of May 1999, the MIF has approved 242 projects worth more than US\$442 million.
- 4.2 MIF's focus is on new programs, innovations, and activities with demonstration value throughout LAC. MIF works in partnership with other groups, such as business associations, industry chambers, government organizations, and financial institutions, and seeks partners that have the capability, expertise and commitment to sustain an effort after MIF seed capital has been disbursed. To help ensure maximum impact, the MIF undertakes all its activities with local counterparts who cover an average of **40%** of project costs.
- 4.3 MIF has three facilities or “windows” of financing: *technical cooperation* to encourage the implementation of policy reforms aimed at fostering private sector development; *human resources* to develop the skills and capabilities of the workforce; and *small and medium enterprises* to strengthen policies and institutions supporting micro, small and medium enterprise development.

- 4.4 In keeping with its mandate to be an innovative force by seeking critical new areas and private sector clients, a new priority of the MIF for the year 2000 will be on addressing non-price factors of competitiveness among the small and medium-enterprise sector, such as: quality and continuous improvement through the adaptation, implementation, and certification of firms in internationally recognized quality and environmental management system standards. Institutional partners for the MIF under this new priority include industrial and producers' associations, chambers of commerce, standards bodies, certification bodies, quality system registrars, accreditation bodies, and other relevant stakeholders.
- 4.5 Two models of technical assistance are presented in this section, in line with the MIF's funding priorities and facilities, to provide potential partners with more specific examples as to what types of objectives and activities grant resources could finance.

*A. The Enabling Conditions of Standardization, Certification, and Accreditation*

- 4.6 The first model of technical assistance addresses the critical issue of standards and the related areas of certification and accreditation, which are created and disseminated by international, regional, and national institutions. Establishing and upgrading capacity in standardization and accreditation institutions, and promoting mutual recognition will improve SME competitiveness and also facilitate inward investment into a country or region.

1. Critical needs to be addressed

- 4.7 The need for improvement of quality, productivity and enterprise competitiveness is well recognized by policymakers in LAC. What is less clear, is the equally pressing need to improve the standards framework in the Americas. Given the growing importance of international standards and technical regulations, inadequate capacities in standardization, certification and accreditation (SCA) are now major causes of low levels of competitiveness in all sectors.
- 4.8 Critical capacities in SCA are interwoven, as is clear when viewing the widespread lack of international acceptance in LAC is of locally issued certificates. For example, local certification to ISO 9000, is often not accepted by international or regional buyers because an internationally recognized body does not accredit the certification body. By blocking SMEs and other potential exporters from international markets, low capacity in the standards framework directly effects enterprise competitiveness.

2. Strategic Objectives of MIF Technical Assistance Under this Model

- 4.9 The overall objective of this model is to improve competitiveness and export performance in the SME sector in Latin America and the Caribbean through:
- i) achieving cost effective and internationally accepted conformity to standards, marks and other requirements demanded in regional and international markets;

- ii) Creating and strengthening the requisite capacity in standards, certification and accreditation bodies necessary for advancing the competitiveness of SMEs in LAC; and,
- iii) Supporting networks and partnerships among stakeholder bodies in standards, certification, and accreditation in order to promote mutual recognition agreements and multilateral agreements for expanding the international acceptance of standards and requirements issued in LAC.

### 3. Main Activities of MIF Technical Assistance

4.10 To address the objectives mentioned previously, several technical assistance activities could be envisioned including:

- Assistance to organizations in the process of review and rationalization of current and proposed legislation regarding SCA and quality and in moving towards a national institutional infrastructure which supports quality improvement, standardization, and certification;
- Assistance in establishing and upgrading national and regional standardization bodies, through training in relevant ISO/IEC guides, review of standards body and plan of continuous improvement, and training for capabilities to conduct high impact awareness raising, workshops and seminars for the private sector, other institutions and government stakeholders;
- Assistance in the design and implementation of programs to assist national and regional certification and accreditation bodies in achieving international recognition of certification for products, systems, measurements, tests and technical personnel; training in peer evaluation process, assessor training based on relevant ISO/IEC guides, on the job training for accreditation bodies quality managers;
- Support in pre-auditing of accreditation bodies in LAC in preparation for recognition by International Accreditation Forum, assistance in networking and participation in forums and partnerships with national and regional accreditation bodies in LAC;
- Assisting all bodies in strengthening links with ISO, IAF, and IAAC;
- Promotion of the networking of SCA bodies and support of efforts for membership and increased participation in regional and international standardization institutions;
- Promotion of partnerships with other national standards bodies for information exchange; and
- Assistance in creating and strengthening national enquiry points and information centers.

### *B. Improving Enterprise Competitiveness through Continuous Improvement*

4.11 This second model of technical assistance is founded on the premise that SME competitiveness must be based on a process of continuous improvement in everything that the firm does. This process is critical to sustained growth and the development of the SME sector in LAC. Management system standards such as ISO 9000 and 14000 are seen as important tools in the service of continuous improvement - rather than ends in themselves. Section II of this paper describes the underlying principles of continuous improvement and the major implications of this approach for enterprise competitiveness.

## 1. Critical needs to be addressed

4.12 Achieving enterprise competitiveness – i.e., the ability to survive and grow in competitive market – will require a disciplined commitment on the part of management and employees to gain the knowledge and skills needed to pursue continuous improvement in the SME sector. This task is made more difficult because local support institutions also often lack critical capacity needed to assist SMEs. Efforts to enhance the competitiveness of SMEs must simultaneously build capacity in the “institutional enablers” – or the local counterparts which are critical for promoting the performance of SMEs. These can be industrial associations, chambers of commerce, standards bodies, and other entities. Building and improving upon the consultative capabilities in these counterparts – while at the same time implementing continuous improvement in pilot enterprise – will be necessary for maximizing resources and promoting sustainability. Similarly, promoting competition and providing adequate training will ensure the market for the supply of services in the area of quality improvement is mature and accessible by SMEs.

## 2. Strategic Objectives of MIF Technical Assistance Under this Model:

The overall objective of this model is to increase competitiveness and achieve measurable improvements in all aspects of business performance in the SME sector in Latin America and the Caribbean by:

- i) Building managerial and staff capabilities in continuous improvement and the creation of customer value;
- ii) Exploiting ISO 9000 and ISO 14000 management system standards as tools to add value as well as to increase market access for each enterprise;
- iii) Utilizing all soft technologies of improvement, including performance indicators, benchmarking, and quality, process, and cost improvement methodologies (including SME software packages).

## 3. Main Activities of MIF Technical Assistance Under this Model

4.13 To address these objectives, several activities of MIF's technical assistance could be envisioned including:

(i) At the enterprise level :

- Assisting SME management in: (i) formulating the appropriate strategy to tackle the issue of continuous improvement; (ii) identifying the most effective performance indicators; (iii) employing benchmarking methods; and (iv) evaluating against local, regional or international best practices;
- Providing specific “hands-on” training for managers and staff in continuous improvement and quality methodologies, ISO 9000 and 14000 up through a pre-audit, and other improvement methodologies as needed (e.g. HAACP); and

- Assisting with the use of information technology, including the Internet, as a cost-effective tool for continual learning and business networking.

(ii) At the institutional level:

- Building consultative capacity in counterpart institutions to train SME managers and employees and to train trainers in quality and continuous improvement, ISO 9000 and ISO 14000 and future management system standards, benchmarking and performance indicators, software tools for quality and financial improvement, to engage in awareness raising on the above; and
- Assisting grant beneficiaries in developing capabilities to network with investment promotion agencies and to assist SMEs by identifying and disseminating information on possible new local, regional or international markets and partners.



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