

10th Anniversary of ISO 14001

Did the environmental management standard save the world or was it
just another bureaucratic system?

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Abstract

The ISO 14001 environmental management systems standard was introduced in 1996. At that time expectations and doubts were presented by different interested parties. After 10 years of operational existence the question should be asked whether it contributed to sustainability or to mere organisational bureaucracy for the implementing companies. This research evaluates the impacts of ISO 14001 in a global perspective considering its historical development. The historical development comprises from the ISO 14001 drafting, through its implementation and certification process, to its future evolution. This study explores global perceptions of the ISO 14001 standard from the main actors' point of view, i.e. developers, implementers and certifiers. Therefore, this thesis compares the expectations, drivers, benefits, problems and visions of the future ISO 14001 implementation and certification revealed by developers, implementers and certifiers, in developed and developing countries. Finally, recommendations on the crucial findings that play an important role in the future of ISO 14001 are presented.

Executive Summary

Society has become more aware of the environmental impacts of its daily activities, as a result of environmental incidents that occurred in the past due to industrialisation. Accordingly, governments reacted with environmental legislation and industries applied end-of-pipe technologies to meet legal requirements. The process of globalisation has not only opened markets but also brought the idea of standardisation to create a baseline competition between companies across the world, and has increased awareness of global environmental problems. Therefore, the international community and industry have been creating initiatives to do something for the environment. Consequently, industries started to apply tools to carry out environmental work in a systematic way, such as environmental management systems (EMS). Its widespread use resulted in the development of EMS standards.

Owing to the commitment to and the interest in Sustainable Development of the International Organization for Standardization (ISO) and the private industrial sectors, fostered by the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, in 1992, the EMS standard ISO 14001 was introduced in 1996. At that time expectations and doubts were presented by different interested parties. After 10 years of operational existence the question should be asked whether it contributed to sustainability or to mere organisational bureaucracy for the implementing companies. This research evaluates the impacts of ISO 14001 in a global perspective considering its historical development. The historical development comprises from the drafting of ISO 14001, through its implementation and certification process, to its future evolution. This study explores global perceptions of the ISO 14001 standard from the main actors' point of view, i.e. developers, implementers and certifiers, as follows:

- The **developers** – persons that were (and are) involved in the creation and continual improvement of the ISO 14001 standard;
- The **implementers** – environmental managers, consultants, specialists and other persons that are involved in the implementation of ISO 14001 in organisations; and
- The **certifiers** – environmental auditors that evaluate compliance with ISO 14001.

The four main research questions are:

- Have the expectations of ISO 14001 been fulfilled?
- What are the benefits of ISO 14001 implementation among different practitioners?
- What are the problems with implementation of ISO 14001 among different practitioners?
- What are the views on the future development of ISO 14001 in developing and developed countries?

This thesis compares its findings, i.e. expectations, benefits, problems and visions of the future ISO 14001 implementation and certification revealed by **developers**, **implementers** and **certifiers**, in developed and developing countries, as presented in the following tables.

Firstly, expectations generated when the ISO 14001 standard was launched were identified among the main actors. Interviewees declared whether their expectations have been fulfilled or not. From the questionnaire responses, the fulfilment was deduced. This is presented in the following table.

Expectations among actors involved in ISO 14001.

Actor	Expectation	Fulfilment
Developers	To introduce a standard for environmental management systems	✓
	Create a more performance oriented rather than system oriented standard	✗
Implementers	To improve organisation’s environmental performance, that would bring other benefits	✓
Certifiers	To certify more organisations	✓
	Improvements on organisation’s environmental performance	✓
	Implementers focus more on performance improvements rather than system improvements	✗

✓ Expectation fulfilled ✗ Expectation not fulfilled

Secondly, implementation of the Standard has brought many benefits, mentioned by **developers, implementers** and **certifiers**. The benefits are presented below:

Benefits from ISO 14001 from the different actor’s point of view.

Developers	Implementers	Certifiers
Leads to environmental awareness	Confidence among and better relations with stakeholders	Confidence to the market and competitive advantage
Leads to responsible environmental behaviour	Competitive advantage	Better relations with stakeholders
Provides a framework to approach environmental issues	Ensures legal compliance	Employees environmental awareness
Implementation leads to a better environmental performance	Commercial benefits	Risk prevention
Implementation leads to continual improvements	Satisfies customers	Satisfy consumer requirements
Implementation leads to efficiency	Lessens environmental impacts	Process efficiency and cost reductions
Improved discussions with local authorities	Cost reductions	The organisation becomes better
Implementation could ensure legal compliance	Benefits from the government	Environmental protection beyond compliance

Thirdly, ISO 14001 has also faced some problems summarised in the next table.

Problems with ISO 14001 – developers, implementers and certifiers perceptions.

Developers	Implementers	Certifiers
Wording and lack of understanding	The system does not guarantee any improvement in environmental performance	Implementation and certification costs
System oriented rather than performance oriented	Demanding documentation	

Difficult promotion in countries underrepresented during the drafting of the Standard	Costs of implementation and maintenance of the system	Stringency of the regulation system, affecting assessment of significant aspects
Lack of promotion of ISO 14004 - additional guidance and extra explanation for EMS development	Unclear guidance and difficult to understand the different requirements	Competence of internal and external auditors
Costly due to the need for consultants	Internal and external auditors are not competent enough	
Misinterpretations and difficulties to identify and assess significance of environmental aspects	Lack of transparency to show compliance with some requirements	Inexperienced with EMS, leading to over documentation and to fear certification
Too much focus on certification	Corruption could bias the certification process	Intangible requirements difficult to follow-up
Lack of government incentives		
Over documentation	ISO 14001 does not require to go beyond legal requirements	Credibility of certification. Unaccredited certification bodies are increasing in number
Credibility of certification, increasing unaccredited agencies. Costly for SMEs		

Finally, **developers, implementers** and **certifiers** provided their predictions of the future of ISO 14001, as follows:

Views on the future of ISO 14001 by developers, implementers and certifiers

Developers	Implementers	Certifiers
ISO 14001 will be integrated with social responsibility towards sustainable development	Implementers from developing countries are more interested to continue working with ISO 14001 as compared to developed countries	ISO 14001 will be integrated with the other important concerns of an organisation i.e. finances, social responsibility, risk assessment, procedures and operations, to focus on sustainability
Certification will continue to grow as a market requirement		Understanding of the Standard will increase
If credibility continues to decline, there will be a decrease of certificates	High increase in implementation of ISO 14001 and number of certificates issued not expected in developed countries	Benefits from implementation and certification will be well known globally
More training and educational material will be provided		Certification will continue to grow as a market requirement
More competent internal and external auditors will be required	Growth of implementation and number of ISO 14001 certificates expected in developing countries	Reliability of certification bodies will determine the increase of certificates issued
Integration with ISO 9001 and OHSAS 18001 will be more common		Integration with ISO 9001 and OHSAS 18001 will be more common

Findings were compared with literature and case studies discussing issues surrounding expectations of the Standard, benefits from and problems with implementation and certification, and future visions of ISO 14001. On this basis, the following conclusions were drawn:

The EMS standard ISO 14001 *per se* can neither save the world nor be seen as just a bureaucratic system. Regarding the former, it is probably known how to improve the world, one way is through *the journey of sustainable development*: where ISO 14001 is an important tool in addressing the environmental pillar of sustainable development, having positive implications among the two others (economic and social) as presented in the benefits from ISO 14001. Concerning the latter position, according to this study's findings it cannot be said that ISO 14001 is just another bureaucratic system! In fact, actors' views on the bureaucracy of ISO 14001 are only related to the amount of paperwork generated from its implementation, therefore the implementers and certifiers are the ones that are making it bureaucratic. This is as a result of voluntary or involuntary misinterpretations of the Standard.

In a nutshell, ISO 14001, the standard of EMS, is an available tool that can improve organisations' environmental performance in any place around the globe, if *and only if* it is properly applied. A proper implementation depends on the commitment of the top manager and how responsibilities are delegated among environmentally aware and committed personnel. Thus, ISO 14001 can contribute to *the journey towards sustainable development*.

Finally, recommendations for ISO 14001 processes and potential studies for future work have been suggested. With respect to the bureaucracy of ISO 14001, the author suggests that better information, education, training and guidance on how to implement ISO 14001 are needed, as well as further improvements on the wording and explanations of the Standard, in order to make it fully understandable. Furthermore, greater promotion of ISO 14004 is needed, as it was remarked by an interviewee ISO 14004: "*should be the starting point, because it guides in an effective and efficient way the application of EMS*".

Serious attention needs to be focused on the credibility of ISO 14001, owing to the great impact reliability makes on ISO 14001 uptake, i.e. implementation and certification. Therefore, rules of accreditation bodies need to be controlled through a surveillance mechanism to ensure that certification agencies procedures are well applied in an organisation's implementation audits.

When it comes to future research, four potential areas have been identified:

- A quantitative comparison of the environmental performance of organisations prior to and after implementing the Standard;
- An economic analysis of the implementation and certification of ISO 14001;
- Implications of the credibility of ISO 14001 certification; and
- The need for an integrated standard on management systems among developers, implementers and certifiers.

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1 Introduction

Society has become more aware of the environmental impacts that its daily activities may lead to. Environmental awareness started to emerge as a result of some devastating environmental incidents that occurred in the past, mainly in the 60s and 70s, due to industrialisation. Hence, governments reacted with environmental legislation and industries responded with reactive approaches in their environmental management, applying end-of-pipe technologies in order to meet legal requirements.

The process of globalisation has not only opened markets, but has also brought the idea of standardisation to create a baseline competition between companies across the world, and has increased awareness of global environmental problems. Therefore, the international community and industry have been creating initiatives to do something for the environment. This practise increased the knowledge and experience of correcting environmental impacts, which combined with the increase of environmental consciousness to result in active and then proactive approaches in handling environmental problems. Proactive thinking resulted in a space being opened up for pollution prevention and voluntary agreements among the industry to work towards sustainable development.

Consequently, industries started applying tools to work in a systematic way regarding the environment, such as environmental management systems (EMS). Its wide use resulted in the development of EMS standards: the most popular environmental management systems standards are the Eco-Management and Audit Scheme (EMAS), a voluntary regulation among the European Union,¹ and ISO 14001 *“the only international standard for an EMS”* (Roberts & Robinson, 1998).

The ISO 14001 standard was published in September 1996 as a result of the commitment to and the interest in Sustainable Development of the International Organization for Standardization (ISO) and of the private industrial sectors fostered by the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, 1992 (International Organization for Standardization, 2006; and Krut & Gleckman, 1998).

The ISO organisation involvement in the development of an international standard for EMS was due to the fact that *“conferences representatives approached leaders of ISO’s Central Secretariat to request their participation at Rio. They specifically asked that ISO make a commitment at the UNCED to create international environmental standards”* (Cascio, Woodside, Mitchell, 1996).

1.1 Purpose and scope

Numerous studies and surveys have been published evaluating the problems and benefits of ISO 14001 in different organisations and around the world from a range of perspectives according to the topic of interest. The author seeks to apply a different and global approach to EMS with the aim of evaluating ISO 14001 in developed and developing countries. Classification between developing and developed countries was made according to the United Nations (see Appendix I).

¹ Council Regulation No. 1836/93, of 29 June 1993.

As this year commemorates 10 years of the ISO 14001 standard existence, this research will evaluate the Standard² from a chronological perspective. It follows the historical development of ISO 14001, from its drafting, through its implementation (taking into account the updated version) and to the certification process. During this development the drivers, actors involved and the expectations generated are identified, as well as the benefits from and problems with ISO 14001³ implementation and certification. Further, the study will seek to document some of the visions of the future of ISO 14001 held by various important actors.

This thesis emphasises the following actors:⁴

- The **developers** – persons that were (and are) involved in the creation and continual improvement of the ISO 14001 standard.
- The **implementers** – environmental managers, consultants, specialists and other persons involved in the implementation of ISO 14001 in organisations.
- The **certifiers** – environmental auditors that evaluate compliance with the ISO 14001 standard.

1.2 Research questions

This thesis aims to answer the following research questions:

1. Have the expectations of ISO 14001 been fulfilled?
 - a) What were the expectations during the establishment of the Standard and right after the ISO 14001 standard was launched?
 - b) Why and where have expectations been fulfilled; and who thinks so?
 - c) Why and where have expectations not been fulfilled; and who thinks so?
2. What are the benefits of ISO 14001 implementation?
 - d) What are the different benefits among different actors (**developers, implementers and certifiers**)?
 - e) What are the differences between developing and developed countries?
3. What are the problems with implementation of ISO 14001?
 - f) What are the different problems among different actors (**developers, implementers and certifiers**)?
 - g) What are the differences between developing and developed countries?
4. What are the views on the future development of ISO 14001 in developing and developed countries?

² When “the Standard” is used throughout this document, it refers to the EMS standard ISO 14001.

³ ISO 14001 refers either to the Standard or to EMS based on the requirements of the ISO 14001 standard.

⁴ Throughout this paper, these three main actors in ISO 14001 are mentioned repeatedly. When they are written in bold (**developers, implementers and certifiers**) this refers to the persons contacted during this research, according to the explanation given.

1.3 Limitations

The study is limited as a result of the following conditions:

- The questionnaire was sent out to the IIIIE Alumni Network.⁵ Only persons that currently work with ISO 14001, or that have practical experience of the Standard, were asked to provide input to the questionnaire. About 20% of the Network fulfilled the specified requirements (by self assessment) and the result of the questionnaire is therefore based on their opinions.
- The questionnaire was mainly based on statements (“myths of ISO 14001”). All respondents were able to add personal opinions and comments to the questions but there is a risk that the statements may have led people in a certain direction.
- The selection of people for the interviews was based on subjective views, and recommendations from specialists on individuals that had an important role during the early stages of ISO 14001. Since many people from several countries made a contribution to the Standard, there is a risk that some important people or certain locations were overlooked in the investigation.
- As the research was focused on applying a holistic view and a global perspective, it cannot reflect the views from every single country, or organisation, around the world.
- People availability in the particular time-frame of the study.

1.4 Methodology

This thesis is the result of qualitative research using “*theoretical and empirical literature to contextualize, compare, and generalize*” the findings from the primary sources – a questionnaire and interviews (Flick, 2006, p. 59).

Theoretical literature regarding EMS and the ISO organisation served as a background to contextualise and to identify the driving forces for the initiation of the EMS standard ISO 14001, as well as its establishment process and its development. Empirical literature was used to identify earlier research studies of the implementation of ISO 14001 in order to provide comparisons with the findings of this research.

Finally, methodological literature served as the basis on which methods to obtain primary sources were chosen. That is, guidance to design the questionnaire and interviews, where a snowballing technique was used: asking the first participants to provide contacts details of other potential participants for this research (Flick, 2006, p. 257).

Altogether, theoretical and empirical literature and primary sources are compared in order to discuss their similarities and differences, as well as to answer the research questions in order to be able to draw conclusions.

⁵ The IIIIE Alumni Network brings together the postgraduates of the Master’s degree in Environmental Management and Policy at IIIIE. These professionals “*engage in environment and sustainability issues from various positions such as consultancies, international, national and local government officials and policy makers, corporate environmental/ sustainability managers, academia, NGOs and the like*” (IIIIE, 2006).

The following section explains the approach followed by the author in locating the primary sources:

The questionnaire

The questionnaire was intended to obtain global experiences, perspectives and visions of the Standard from the IIEEE Alumni Network, as it was known that some members had worked or have been working with ISO 14001 (see Chapter 4).

First of all, approval from the IIEEE Alumni Network Executive Committee was required to send out the questionnaire. At the same time, the questionnaire was designed on the e-Val server at Luvit AB, the programme used by Lund University for course evaluation and course related questionnaires. Permission was sought to use the Luvit e-Val server.

Secondly, the questionnaire was sent out on the 1st of July, 2006, setting an answer submission deadline for the 11th of July. This deadline had to be extended one more week (July 21st, 2006), due to the summer holiday.

Thirdly, data was processed using e-Val which generated a statistical report. This report served as a base to work further on Excel, breaking down the statistics into categories and creating graphs to show the results. Thus, Chapter 4 presents the findings from the questionnaire which represents the **implementers'** perspective.

The interviews

Interviews were designed to get the perspective of the **developers** of the Standard and **certifiers** of ISO 14001 implementation. Interviewees are authorities in the field as they have wide knowledge of ISO 14001. **Developers** participated in the development of the Standard (ISO 14001:1996), its update (ISO 14001:2004), and some will participate in the next revision in 2008. The **certifiers** are environmental auditors working for accredited certification bodies, or are people highly involved in the certification process. Some of the interviewees were suggested by the Supervisor of this thesis and the others were obtained through a snowballing technique (as mentioned above).

Once interview questions were designed following the historical development of the ISO 14001 standard, the persons suggested by the Supervisor that were involved in the creation of the Standard and are still involved were contacted to set a date for a phone interview. Then the interview was conducted, and the notes taken were sent out to the interviewee in order to avoid misunderstandings. Findings from the interviews are described in Chapter 3 for **developers** and in Chapter 5 for **certifiers**.

Regarding **developers**, 14 potential interviewees from the following countries were contacted: Argentina, Australia, Canada, China, Colombia, Egypt, Germany, Indonesia, Japan, Sweden, The Netherlands, UK, USA and Zimbabwe. However, it was possible to interview only 7 people from: Australia, Germany, Japan, Sweden, UK and Zimbabwe. It would have been interesting to interview at least one person from all of the countries originally contacted.

With respect to **certifiers**, potential interviewees from 12 countries were contacted: Australia, China, Colombia, France, Greece, India, South Africa, Sweden, Switzerland, UK, USA and Zimbabwe. Only 6 interviews were conducted to people from: France, India, Sweden, Switzerland, USA and Zimbabwe.

2 Background

2.1 Environmental Management Systems (EMS)

An EMS is a strategic tool to improve an organisation’s environmental performance by: setting objectives and targets; establishing procedures, responsibilities and practices to minimise the organisation’s environmental impacts by controlling their processes, products and services; as well as creating business initiatives to continual improvements (Brorson & Larsson, 1999, p.11; and Roberts & Robinson, 1998, p. xiii-xiv).

ISO 14001:2004 defines EMS as “part of an organization’s management system used to develop and implement its environmental policy and manage its environmental aspects. A management system is a set of interrelated elements used to establish policy and objectives and to achieve those objectives. A management system includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources” (Terms and definitions, 3.8).

There are five principles of an EMS that comprise the “cycle of continual improvement”, the so-called Plan-Do-Check-Act (PDCA) (Brorson & Larsson, 1999, p.15; Khure, 1995, p. 35-43; Roberts & Robinson, 1998, p.3; and Sayre, 1996, p.53). Figure 2-1 depicts the principles mentioned below. They can be compared with the structure of ISO 14001 presented in Chapter 2.2.3 and Figure 2-5.

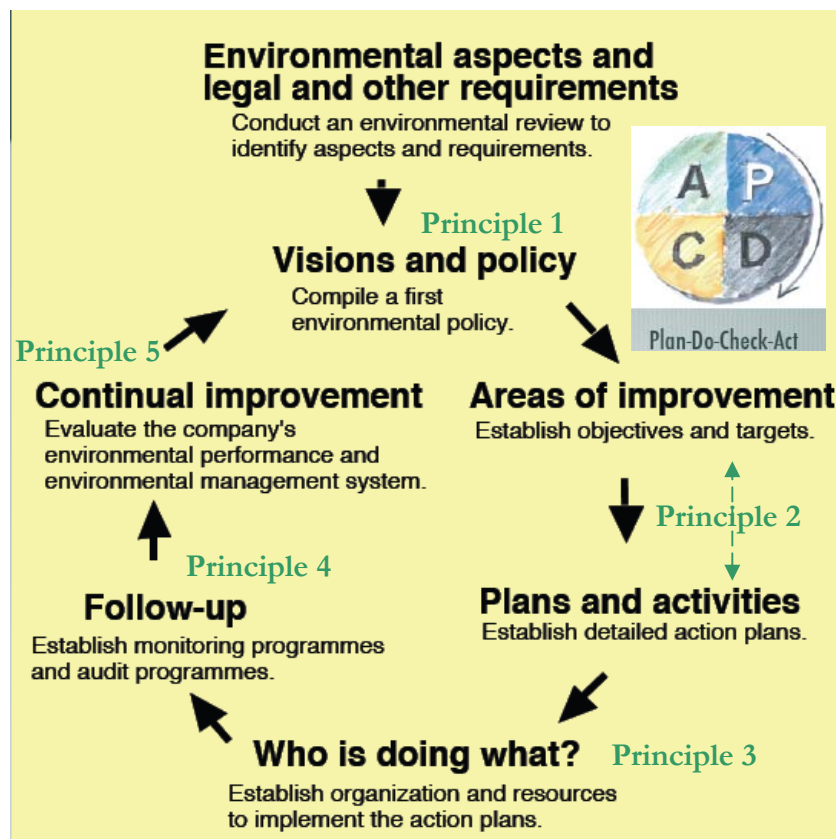


Figure 2-1 Principles of an EMS

Source: Adapted from Brorson, 2005a.

In brief the principles are:

Principle 1: Commitment and Policy

After an initial environmental review and identification of legal requirements, the organisation commits itself to the EMS by defining the environmental policy.

Principle 2: Planning

To fulfil the environmental policy the organisation sets objectives and targets, elaborates environmental programmes and plans to meet legal requirements, objectives and targets.

Principle 3: Implementation

Responsibilities and authorities are delegated, and resources are assigned to carry out the programmes and plans.

Principle 4: Measurement and evaluation

Internal audits and other activities are conducted to evaluate the organisation's environmental performance and the efficiency of the system.

Principle 5: Review and improvement

The audits are analysed to review the EMS, looking for opportunities for improvements.

2.1.1 Driving forces

The increased environmental consciousness globally has led many organisations to work for the environment as part of their core businesses. The literature identifies the driving forces for adopting EMS as follows: (Brorson & Larsson, 1999, p.9; and Cascio, et al., 1996, p. 70-75):

- Environmental awareness of stakeholders, i.e. society, NGOs, employees, shareholders, customers, clients, financial institutions, insurers, authorities, competitors, among others;
- The increase of national and international environmental initiatives, and stringent environmental legislation and enforcement;
- Stricter economic instruments on environmental performance; and
- The promise of good reputation and reliability when working for the environment.

2.1.2 Benefits of an EMS

There are many possible benefits that organisations can gain when implementing an EMS. The following is a compilation list of the benefits identified by different authors: (Brorson & Larsson, 1999, p.11-12; Kuhre, 1995, p.11-18; Roberts & Robinson, 1998, p. 13-15; and Sayre, 1996, p.24-25):

- Minimisation of environmental impacts of its activities, products and services;
- Cost savings by keeping consumption records, applying cleaner technologies, considering pollution prevention, and meeting legal requirements;
- Increased efficiency through resource efficiency, process improvements, and identifying internal management problems;

- Increased market opportunities;
- Compliance with environmental legislation and regulations;
- Meeting customer's environmental expectations and demands;
- Improved relations with stakeholders (i.e. the environment, neighbours, NGOs, employee, shareholders, customers, clients, financial institutions, insurers, authorities, competitors, etc);
- Increased motivation, commitment of and communication with employees; and
- Improved image and competitive advantage.

2.2 ISO Standards

The International Organization for Standardization is a non-governmental organisation established in 1946. It is a network of the National Standards Bodies (NSBs) of 157 countries that seeks *"to facilitate the international coordination and unification of industrial standards"* (ISO, 2006). NSBs in some countries are governmental organisations, in others quasi-governmental institutions and in others private national industry associations (Krut & Gleckman, 1998, p.7).

ISO Central Secretariat is located in Geneva, Switzerland. Its function is to give administrative and technical support to the members, to coordinate standards' development and finally its launch. The ISO organisation is financed by an annual subscription fee paid by each NSB depending on the National Gross Income of the member country, and to a lesser extent by the sales of its products – the standards. These incomes are not enough to cover the whole operational costs of the system. Therefore, when developing a standard, NSB and the organisations that send their delegated experts to work in a Technical Committee (TC) have to cover travel costs and other expenses (ISO, 2006).

There are three different types of membership, namely full members, correspondent members and subscriber members. Table 2-1 explains the differences between ISO members, which depend on meeting a set of requirements that, in turn, provide certain rights.

Table 2-1 Classes of ISO membership.

Membership	Characteristic	Role in a TC	Rights in a TC
Full member	Must have a NSB ⁶	Participating Member (P- member)	- to vote - to attend meetings - to receive documents
Correspondent member	Standard-related organisation ⁷	Observing Member (O- member)	- to attend meetings - to receive documents
Subscriber member	Standard-related organisation in countries with very small economy	These countries pay a reduced fee, limiting its rights. - Cannot attend meetings - Have no formal access to documents	

Source: Table created by the author based on information from (Krut & Gleckman, 1998, p.43).

⁶ All developed countries have a NSB.

⁷ These kinds of organisations are in developing countries. Only 53% of developing countries have a NSB (Krut & Gleckman, 1998, p.43).

Technical Committees are groups of experts from member countries established by ISO's Technical Management Board (TMB) in charge of developing a specific standard. For clarifications refer to Figure 2-2, which illustrates the ISO organisational structure.

ISO standards are developed by any stakeholder interested in a particular standard, and are thus voluntary. Drafting a standard involves a consensus process of extensive discussions and negotiations (Cascio, et al., 1996, p.7). Therefore, developing a standard is an economic, human and time consuming process. The establishment of ISO standards follows three principles, namely consensus, industry-wide and voluntary (ISO, 2006).⁸

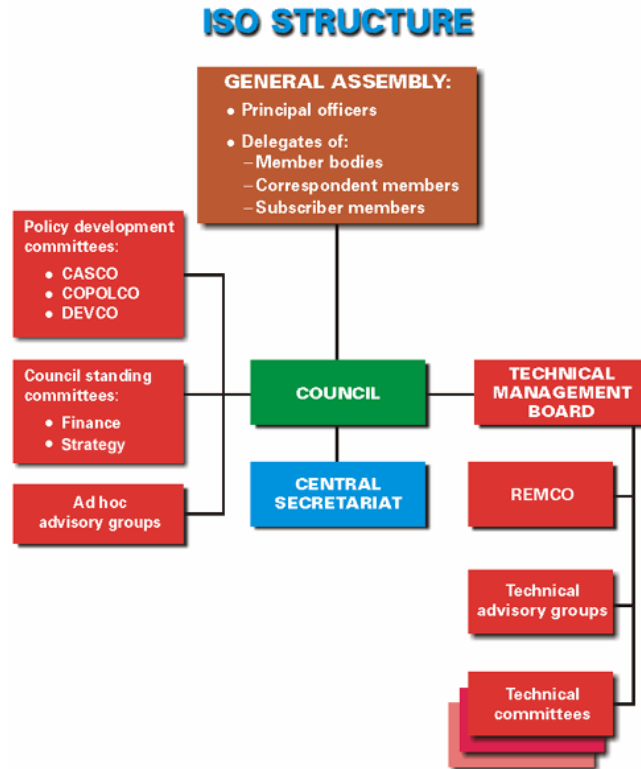


Figure 2-2 ISO organisational chart.

Source: ISO, 2006.⁹

2.2.1 ISO 14000 Series

The ISO 14000 series are generic standards of management systems and tools aimed at environmental protection (Cascio, et al., 1996, p.3). In 1993, ISO established the Environmental Management Technical Committee, ISO/TC 207, in charge of developing a strategic approach to environmental management (ISO, 2006). Chapter 2.2.2 further explains the role of the ISO/TC 207 in the Standard's development process.

⁸ For further illustration regarding principles: [Online]. Available: <http://www.iso.org/iso/en/stdsdevelopment/whowhenhow/how.html> [2006, May 29]

⁹ [Online]. Available: <http://www.iso.org/iso/en/aboutiso/isostructure/isostr.html> [2006, May 29]

The goal of the ISO 14000 family is to provide for any organisation, irrespective of its activities, size or location, a framework with which to address its environmental issues. Thus, the following features, presented by Hortensius & Barthel (1997), were considered beyond the scope of the ISO 14001 series: “*Test methods for pollutants (because these are dealt with by other technical committees), setting limit values regarding pollutants and effluents, setting of environmental performance levels and standardisation of products*” (p.22).

A full list of the ISO 14001 family standards under development and developed by the ISO/TC 207 is presented in Appendix II. Figure 2-3 depicts the way those standards are related.

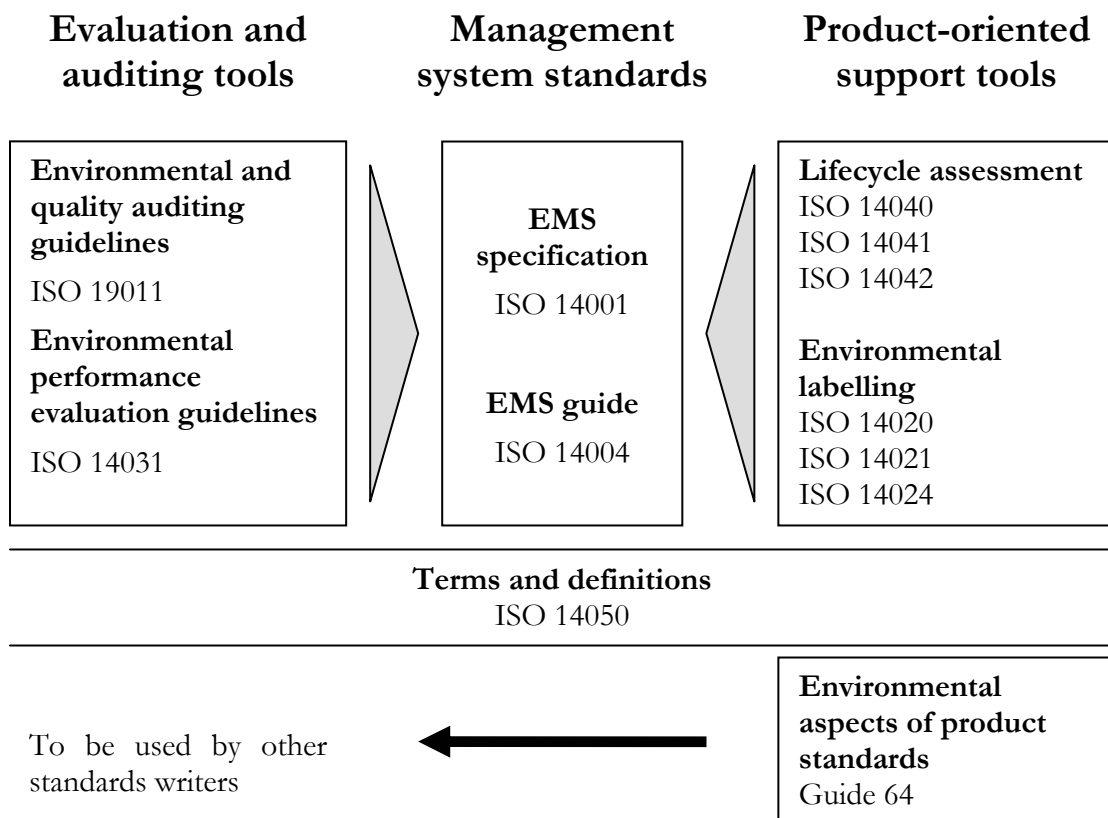


Figure 2-3 Structure of some standards in the ISO 14000 series and their relationship.

Source: Hortensius & Barthel, 1997, p.22.

ISO 14001:1996 and ISO 14004:1996 were the first standards established by ISO/TC 207, in September 1996. Updated versions were published for both ISO 14001 and ISO 14004 in November 2004. Chapter 2.2.4 presents ISO 14001 improvements.

While ISO 14001 specifies the requirements for EMS implementation that an organisation must meet to get certification from a third party – certification body (refer to Chapter 2.3), ISO 14004 provides additional guidance and supplementary information and explanations for EMS development (Hortensius & Barthel, 1997, p.23).

2.2.2 Setting the new environmental management system standard

As mentioned in the introduction (Chapter 1), during the Rio Earth Summit Conference the ISO organisation accepted the request from the Business Council for Sustainable Development to create a voluntary international environmental standard system.

In October 1992 the Strategic Advisory Group on the Environment (SAGE), formed a year earlier by the ISO organisation, decided to develop standards for environmental management. This was a unanimous decision made by 80 participants from NSBs, industrial trade associations, private sector firms, consulting firms, governments, NGOs, international organisations, and universities (Krut & Gleckman, 1998, p.50).

Then, in January 1993, the ISO/TC 207 was created to develop standards for environmental management, tools and systems regarding different environmental matters (Cascio, et al., 1996, p.9). The ISO/TC 207 is comprised of six subcommittees (SC), each focusing on different environmental issues as shown in Table 2-2.

Table 2-2 The structure of ISO/TC 207, the environmental management technical committee.

Subcommittee	Task	NSB responsible
ISO/TC 207/SC 1	Environmental management systems	British Standard Institution (BSI)
ISO/TC 207/SC 2	Environmental auditing	Netherlands Normalisatie-Instituut (NNI)
ISO/TC 207/SC 3	Environmental labelling	American National Standards Institute (ANSI)
ISO/TC 207/SC 4	Environmental performance evaluation	Standards Australia
ISO/TC 207/SC 5	Life-cycle assessment	Association Française de Normalisation (ANFOR)
ISO/TC 207/SC 6	Terms and definitions	Norges Standardis-regeringsforbund (NSF)

Source: Table made by the author based on information from (Cascio, et al., 1996, p.17) and (Krut & Gleckman, 1998, p.53).

Thus, ISO/TC 207/SC 1 developed ISO 14001 by a six step process as follows (ISO, 2006; and Krut & Gleckman, 1998, p.52-59):

Stage 1: Proposal stage

To confirm the need of the environmental management system standard, the new work item proposal (NP) is submitted for vote by delegations participating in the technical committees. The acceptance of the proposal depends on the commitment of at least five full members (see Table 2-1). Hence, NSBs from UK, The Netherlands, USA, Australia, France and Norway became project leaders as listed in Table 2-2.

Stage 2: Preparatory stage

Working groups (WGs) are created to prepare a Working Draft (WD). The WGs' experts contribute with their knowledge rather than represent their countries. The WD is circulated among WGs and the subcommittee representatives. Meetings are held when there are conflicting points and to finalise the drafts. Once the working draft is complete, it is given to the TC or SC.

Stage 3: Committee stage

When the working draft is delivered to TC or SC it is no longer a WD; it becomes a Committee Draft (CD). This is distributed among NSBs to be commented on and so technical issues can be addressed. During this stage, key concepts, technical content and the final structure are developed. For the ISO 14001 standard development this process lasted 2 years (1993-1995), during which time many meetings were held, for example in Brazil, France, Norway, The Netherlands and USA among others. Meetings, comments and votes by post generated huge expenses. An estimation made by the International Environmental Systems Update¹⁰ in 1997 calculated “*that members of SC1 collectively spent roughly \$14 million for each page of the ISO 14001 standard*” (Krut & Gleckman, 1998, p.57). In June 1995 the CD was voted as a Draft International Standard (DIS).

Stage 4: Enquiry stage

ISO Central Secretariat distributes the DIS to all ISO members giving a five-month period to comment on it and vote. Any technical comments are no longer received, but are instead considered for future revision of the standard. The DIS is approved if two-thirds of the P-members are positive and if no more than one-quarter of the total number of votes are negative.

Stage 5: Approval stage

The Final Draft International Standard (FDIS) is circulated for a two-month final voting period. In the spring of 1996, ISO 14001 obtained a “yes” vote to become an International Standard.

Stage 6: Publication stage

Each NSB is given a two-month period to adopt the new standard at a national level.

For further guidance Figure 2-4 illustrates, step-by-step, the six-staged process standard's creation.

¹⁰ The International Environmental Systems Update (IESU) is a monthly newsletter.

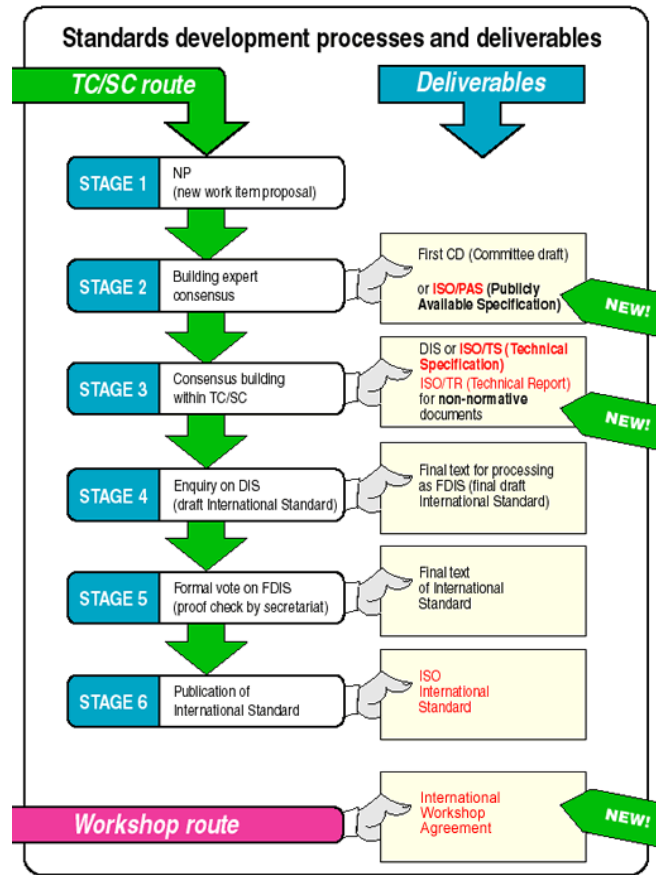


Figure 2-4 ISO’s standards development processes.

Source: ISO, 2006.¹¹

2.2.3 ISO 14001

The environmental management systems standard ISO 14001, as stated in the Standard’s introduction, aims “to support environmental protection and prevention of pollution in balance with socio-economic needs” and “is intended to apply to all types and sizes of organization and to accommodate diverse geographical, cultural and social conditions” (ISO 14001).

ISO 14001 requirements cause an organisation to identify and assess its environmental aspects, consequently setting objectives and targets. Then, proactive initiatives among the employees and the top management can be started to apply effective and efficient processes to improve environmental performance; thus working towards continual improvement.

The Standard follows the structure of its precursor ISO 9001, the quality management systems standard, already in place 10 years before the publication of ISO 14001 (ISO, 2006). That is, the application of the “process approach”, Plan-Do-Check-Act (PDCA) within the 5 main components of ISO 14001, shown in Figure 2-5. Here, “Plan” comprises environmental policy and planning, “Do” refers to implementation and operation, “Check”

¹¹ [Online]. Available: <http://www.iso.org/iso/en/stdsdevelopment/whowhenhow/proc/deliverables/schema.html> [2006, May, 29]

involves checking and management review, and finally “Act” includes corrective action and continual improvement.

The structure of the ISO 14001 standard is comprised of 5 main components, 17 system elements and 55 “shall” – the requirements (Brorson, 2005). In Chapter 2.2.4 the components and system elements are presented and the two versions of ISO 14001 (ISO 14001:1996 in

Table 2-3 and ISO 14001:2004 in Table 2-4) are compared.

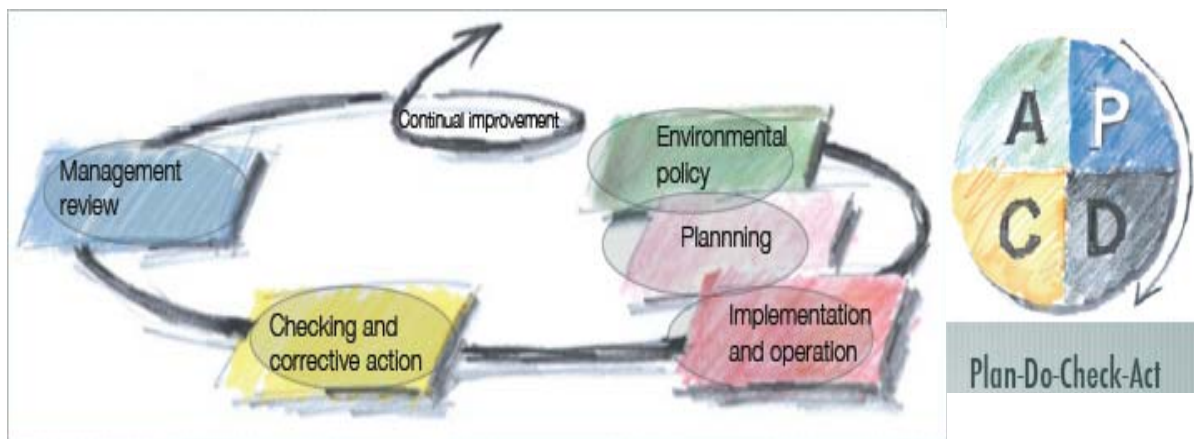


Figure 2-5 Structure of ISO 14001: 5 main components, plus continual improvement.

Source: Brorson, 2005a.

Basically, “ISO 14001, provides a framework to direct the use of organizational resources to the full breadth of actual and potential environmental impacts through reliable management processes and a base of educated and committed employees” (Cascio, et al., 1996, Preface). ISO 14001 is identified by various authors as the most outstanding standard of the ISO 14000 series,¹² primarily because it is the most widely used of the ISO 14000 family.

In the words of R. Hillary (2006), pointed out during her interview, “ISO 14001 is the star among the ISO 14000 series”. Its popularity is caused by the fact that ISO 14001 is “liked by the market, internationally available and recognised, not too difficult to achieve (especially if you’re a big company) and it satisfies the users” (Hillary, 2000, p.11). However, there are many criticisms of the Standard. Again, Hillary (2000) does not hide them “claims that it is elitist, that it is an Anglo-Saxon approach, that it is designed to exclude trade from developing countries, that it is not relevant to smaller firms”.

¹² In the literature there are different ways to refer to the importance of ISO 14001 among the ISO 14000 family:

- “ISO 14001, the foundation of the entire ISO 14001 series, is such a proactive environmental protection strategy” (Cascio, et al., 1996, Preface).
- “The ISO 14001 [...] is arguably the most consequential in the ISO 14000 series” (Cascio, et al., 1996, p.32).
- “The 14001 EMS standard is the cornerstone of the ISO 14000 series” (Krut & Gleckman, 1998, p.10).
- “Of central importance in the ISO 14000 series are [...] ISO 14001 and ISO 14004” (Hortensius & Barthel, 1997, p.23).

2.2.4 Comparison of the first product – ISO 14001:1996 and the improved product – ISO 14001:2004

The ISO organisation requires that every 5 years must be decided whether to withdraw, or revise, or let a standard be as it is (Almgren, 2006). Hence, the ISO/TC 207 met in Stockholm between 2000 and 2004 to review the first products published in September 1996, ISO 14001 and ISO 14004.¹³ In order for organisations to make the transition between the first and the second version, a transition period of 18 months was given. Therefore, ISO 14001:1996 was retained as valid until May 15, 2006 (Brorson & Almgren, 2006, p.25).

The revision of the Standard required: not adding “shall” requirements, better harmonisation with the latest version of the quality management systems standard ISO 9001:2000, more focus on environmental performance and less focus on documentation and improvements to the document to make it easier to read and understand (Brorson & Almgren, 2006, p.25).

In general, ISO 14001:2004 revised the wording and improved the clarity of terms and definitions, avoided inconsistencies with ISO 14004 and improved linkages with other standards. Moreover, “ISO 14004 was extended (from 1½ – 2 pages to 6 pages) to give further guidance on identification on aspects” (Rodgers, 2006). The identification of environmental aspects is one of the most difficult requirements of ISO 14001, not only as identified in theory but also as corroborated during this research in the questionnaire (Chapter 4) and the interviews (Chapter 3 and Chapter 3.4).

The main structure of the standard remained unchanged. There are still 5 main components and 17 system elements. However, for wording improvements some changes in system elements distribution and names were made. Therefore, 52 “Shall” requirements written in ISO 14001:1996 went up to 55 in ISO 14001:2004; yet these are basically the same, merely improved (Brorson & Almgren, 2006, p.25).

There are some general wording improvements in the updated version, ISO 14001:2004. Where in some elements it was required to “establish and maintain”, the new version adds “establish, implement and maintain”¹⁴ to ensure functionality. Moreover, the word “employees” or “personnel” used in ISO 14001:1996 was replaced by “persons working for or on behalf of the organisation” to include contractors and volunteers (U.S Naval Facilities Engineering Service Center – NFESC, 2006).

Table 2-3 lists the components (in capital letters) and system elements (subheadings) enumerated as the Standard document (ISO 14001:1996) to be compared with Table 2-4 which presents the major changes.

¹³ It is important to make clear that as ISO 14004 is complementary to ISO 14001 the revision automatically implies both standards.

¹⁴ In environmental aspects (4.3.1), legal and other requirements (4.3.2), objectives, targets and programmes (4.3.3), Resources, roles, responsibility an authority (4.4.1), competence, training and awareness (4.4.2), operational control (4.4.6), emergency preparedness and response (4.4.7), monitoring and measurement (4.5.1), evaluation of compliance (4.5.2), nonconformity, corrective action an preventive action (4.5.3), internal audit (4.5.5).

Table 2-3 The structure of ISO 14001:1996.

4 Environmental management system requirements	
4.2 ENVIRONMENTAL POLICY	4.4.4 Environmental management system documentation
4.3 PLANNING	4.4.5 Document control
4.3.1 Environmental aspects	4.4.6 Operational control
4.3.2 Legal and other requirements	4.4.7 Emergency preparedness and response
4.3.3 Objectives and targets	4.5 CHECKING AND CORRECTIVE ACTION
4.3.4 Environmental management programme(s)	4.5.1 Monitoring and measurement
4.4 IMPLEMENTATION AND OPERATION	4.5.2 Nonconformance, corrective and preventive action
4.4.1 Structure and responsibility	4.5.3 Records
4.4.2 Training, awareness and competence	4.5.4 Environmental management audit
4.4.3 Communication	4.6 MANAGEMENT REVIEW

Source: Brorson, T. & Larsson, G., 1999, p.17.

In brief, changes to the main elements of ISO 14001 are as follows (other changes in the system elements are shown in Table 2-4). The environmental policy is required to be communicated to persons that work for or on behalf of the organisation. The planning stage must define a clear scope, and although less stringent goals can be defined the procedures must nevertheless be clear. In addition, this stage focuses more on products and services and there are clear requirements on legal compliance. In implementation and operation there is more focus on how to deal with indirect environmental aspects and there are clear requirements on internal and external resources for environmental work. In the check component there is a greater focus on internal environmental audits, with specific goals set (Brorson & Almgren, 2006, p.25-26).

Table 2-4 The structure of ISO 14001:2004 and examples of changes compared to ISO 14001:1996.

Element of ISO 14001	Examples of innovations and changes in the revised version of ISO 14001 (ISO 14001:2004)
4.1 General	<ul style="list-style-type: none"> - The company must show how it continually meets the requirements of the standard. - Scope and boundaries of the system must be clearly defined (to avoid companies excluding “problematic” operations from the system).
4.2 Environmental policy	<ul style="list-style-type: none"> - The policy should be in line with the scope and boundaries of the system. - The policy should be communicated to all persons that work on behalf of the company.
4.3.1 Environmental aspects	<ul style="list-style-type: none"> - Clarification concerning the step to identify all aspects and then select the significant ones. - More focus on indirect aspects (e.g. suppliers, services and products). - More focus on aspects of planned changes in operations, products and services.

4.3.2 Legal and other requirements	<ul style="list-style-type: none"> - Clarification that the company should meet the legal requirements associated with the environmental aspects. - The importance of compliance with legislation is stressed. - Clarification on how the company should deal with “other requirements”.
4.3.3 Objectives, targets and programmes	<ul style="list-style-type: none"> - The link between the objectives and the policy, prevention of pollution, legal and other requirements and continual improvement should be clear. - Objectives and targets should be measurable (if possible). - It is not necessary to implement all three levels (objectives, targets and programmes) if this is not in line with the company’s normal way of managing goals and action plans.
4.4.1 Resources, roles, responsibility and authority	<ul style="list-style-type: none"> - The top management must assure that necessary resources (money, people, time, etc) are available for efficient environmental management. - The management representative should suggest changes and improvements as input to the management review.
4.4.3 Communication	<ul style="list-style-type: none"> - The company must decide if it aims to externally communicate environmental issues. The decision should be documented. - If the company decides to communicate externally it should describe the methods for communication. - The company can never decide not to communicate with the authorities.
4.4.4 Documentation	<ul style="list-style-type: none"> - A specification that the documentation should include the main components of the system, the environmental policy, objectives, other elements of the system and how the elements interact.
4.4.5 Control of documents	<ul style="list-style-type: none"> - Documents (e.g. correspondence/requirements issued by the authorities) that arrive from outside the company should be recorded in a controlled way. - The company no longer needs to maintain a register of all documents in the environmental management system.
4.4.6 Operational control	<ul style="list-style-type: none"> - No major changes.
4.4.7 Emergency preparedness and response	<ul style="list-style-type: none"> - More focus on adverse environmental impact. - Clarification about procedures to identify risk for emergencies and to take appropriate action.
4.5.1 Measurement and monitoring	<ul style="list-style-type: none"> - Minor changes but clarification that monitoring equipment should be calibrated or verified.
4.5.2 Evaluation of compliance	<ul style="list-style-type: none"> - This is not new compared to ISO 14001:1996, but to stress the importance of compliance with legal and other requirements a new system element was introduced.
4.5.3 Nonconformity, corrective and preventive action	<ul style="list-style-type: none"> - Clarification by the introduction of a more logical sequence between the nonconformity and relevant actions to be taken by the company.
4.5.4 Control of documents	<ul style="list-style-type: none"> - Records should be kept but it is no longer needed to specify for how long.
4.5.5 Internal audit	<ul style="list-style-type: none"> - Clarification that the element aims at “internal audits”. - Specified requirements on audit programme, audit criteria and unbiased auditors.
4.6 Management review	<ul style="list-style-type: none"> - Specifications concerning the contents of the agenda for the management review. - The role of continual improvement is clarified.

Source: Brorson & Almgren, 2006, p.25-26.

2.3 Processes behind the standard

2.3.1 ISO 14001 Implementation process

To adopt the Standard organisations generally need to hire a consultant(s) or train employee(s) to carry out the implementation in a better and faster manner. It can also be assigned to the environmental manager or a knowledgeable employee on environmental issues using the guidelines for implementation ISO 14004 and/or handbooks available in the

market. The implementation process follows the “continual improvement cycle” – PDCA presented in Chapter 2.1 and Chapter 2.2.3.

Once the organisation has implemented the Standard it can be decided whether or not to show the reliability of its EMS. There are three ways to prove that an organisation’s EMS complies with ISO 14001 requirements, namely self-declaration, second-party recognition or third-party certification (Kuhre, 1995, p.43 and Roberts & Robinson, 1998, p.18). The latter is presented in Chapter 2.3.2, which explains ISO 14001 certification process.

Self-declaration

The organisation carries out its own audit on the EMS against the Standard’s requirements and declares compliance with the ISO 14001 standard.

Second-party recognition

Another organisation, e.g. clients or suppliers, declares that the organisation in question meets the provisions of the ISO 14001 standard.

2.3.2 Certification/registration process

This is a formal third-party certification from an independent organisation called a certification body (Roberts & Robinson, 1998, p.18). This certification agency can be accredited or not, and again the reliability issue plays an important role when choosing the certifier. To certify the organisation’s EMS an external, autonomous and independent certification agency is hired, that officially assures conformity with the requirements of ISO 14001 (Roberts & Robinson, 1998, p.18).

Certification/registration¹⁵ is an exhaustive process that can take several months and is generally conducted by the following steps (Brorson & Larsson, 1999, p.189; Chitemerere, 2006; Dalrymple, 2006; Roberts & Robinson, 1998, p.18; and Jain, 2006):

Step 1: Preliminary assessment / Readiness evaluation

This is an initial review or “gap analysis” of the EMS before the main certification assessment to find out whether the organisation is ready. This helps to identify nonconformance and the taking of corrective action before certification procedures begin.

Step 2: Document review

This is an off-site audit of the main documents, such as environmental policy, objectives and targets, records, programs and plans to ensure their existence and that they are properly prepared.

Step 3: Main assessment or certification audit

This is a site visit conducted after ensuring preparedness for the main audit and allowing improvements from the document review and an initial assessment. This audit carries out an in-depth inspection of the facility and interviews people involved in the EMS implementation, to verify through a detailed assessment of the EMS whether it meets the requirements of ISO 14001. It takes several days.

¹⁵ It is important to clarify that, although “certification” and “registration” are not synonymous, both in the ISO context refer to exactly the same process (ISO, 2006).

Step 4: Certification/registration

“If the main assessment is successful, a certificate is issued. The certifier then notifies the national body responsible for overseeing ISO 14001 implementation in the country” (Roberts & Robinson, 1998, p.19). The certificate is valid for 3 years.

Step 5: Surveillance

Once certified, the EMS is assessed periodically, generally every six months, to ensure its functioning and continual improvement, and conformance with ISO 14001 requirements.

Renewal cycle

If the organisation decides to renew the certificate, the above process is conducted again from the second step. Only the first step is considered when the organisation has significant changes, e.g. new products, increasing production, relocation, new structures and so on.

2.3.3 ISO 14001 certifications worldwide

The ISO organisation uses the quantity of certificates issued by accredited certification bodies¹⁶ as an indicator of the success of ISO 14001 adoption (Hillary, 2006). The ISO organisation conducts annually a survey on certification of several of its standards. The data is provided by *“ISO national member institutes, certification and accreditation bodies and certification databases”*, and information is obtained from just the certification bodies that are accredited by the accreditation bodies that are members of the International Accreditation Forum (ISO, 2006).

The following figures present the summary of the ISO survey 2005 (Figure 2-6) and some detailed information that is country specific (Figure 2-7), mentioned later in Chapter 3 and Chapter 3.4.

¹⁶ Information regarding accreditation is provided in Chapter 2.3.4

ISO 14001 principal results

World results	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
						Total of which 14001:2004
World total	36 464	49 440	64 996	89 937	111 162	56 593
World growth	13 567	12 976	15 556	24 941	21 225	
Number of countries/economies	112	116	113	127	138	107

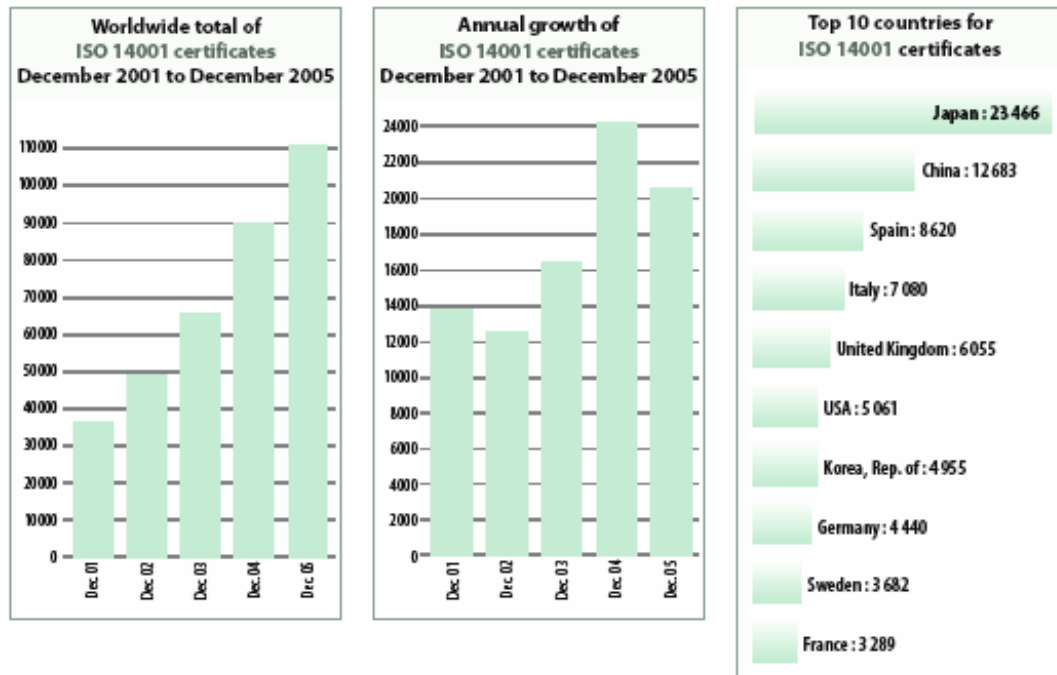


Figure 2-6 Summary of worldwide ISO 14001 certificates issued – 2005

Source: *The ISO Survey of certifications 2005*.¹⁷⁻¹⁸

¹⁷ For further information: [Online]. Available: <http://www.iso.org/iso/en/commcentre/pressreleases/2006/Ref1021.html> [2006, August 14]

¹⁸ As there is no mandatory reporting in the ISO 14001 standard, in some countries the number of certificates could be underestimated. That is the case of Sweden, where there was 4,000 certificates issued by the end of 2005. [Online]. Available: <http://www.greenbusiness.se/ems-eng-0601.pdf> [2006, November 14]

Africa / West Asia	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
					Total	of which 14001:2004
Egypt	100	101	195	289	354	354
India	400	605	879	1250	1 698	859
Iran	34	54	88	400	407	341
Saudi Arabia	6	5	10	17	28	23
South Africa	169	264	378	393	540	188
Sudan		1				
Zimbabwe	6	5	7	19	26	3
Total	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
Total Africa/ West Asia	924	1 357	2 002	3 014	3 993	
No. of countries/economies	30	33	30	38	43	
Total 14001:2004			In 31 countries		2 293	

Central and South America	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
					Total	of which 14001:2004
Argentina	175	249	286	408	454	454
Brazil	350	900	1008	1800	2 061	2 061
Chile	17	55	99	312	277	205
Colombia	41	69	135	217	275	60
Cuba				1	3	3
Nicaragua				1	2	
Uruguay	29	32	32	42	52	29
Venezuela	9	17	20	17	65	27
Total	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
Total Central and South America	681	1 418	1 691	2 955	3 411	
No. of countries/economies	22	21	21	24	26	
Total 14001:2004			In 20 countries		2 941	

Europe	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
					Total	of which 14001:2004
Belarus	2	1	4	42	87	41
Czech Republic	174	318	519	1288	2 122	57
France	1092	1467	2344	2506	3289	1176
Germany	3 380	3700	4144	4320	4440	4440
Greece	66	89	126	173	254	254
Iceland	2	3	3	5	6	
Italy	1 295	2 153	3 066	4 785	7 080	3 127
Lithuania	21	33	72	155	208	63
Netherlands	942	1073	1162	1 150	1 107	254
Norway	298	278	350	441	452	452
Serbia and Montenegro			12	46	77	30
Spain	2 064	3 228	4 860	6 473	8 620	8 620
Sweden	2 070	2 730	2 330	3 478	3 682	2 247
Switzerland	762	1 052	1 155	1 348	1 561	1 561
Ukraine	1	4	7	36	55	6
United Kingdom	2 722	2 917	5 460	6 253	6 055	3 189
Total	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
Total Europe	17 941	23 305	30 918	39 278	47 837	
No. of countries/economies	39	41	40	43	43	
Total 14001:2004			In 39 countries		30 642	

North America *	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
					Total	of which 14001:2004
Canada *	801	1064	1274	1492	1 636	
Mexico *	254	369	406	492	422	
USA *	1645	2 620	3 553	4 759	5 061	
North America *	2 700	4 053	5 233	6 743	7 119	
No. of countries/economies	3	3	3	3	3	

Australia/ New Zealand	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
					Total	of which 14001:2004
Australia	1 370	1 485	1 250	1 898	1 778	1 778
New Zealand	52	78	155	194	180	180
Total	1 422	1 563	1 405	2 092	1 958	

Far East	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
					Total	of which 14001:2004
Cambodia			1	1	1	
China	1 085	2 803	5 064	8 862	12 683	1 385
Hong Kong, China	165	208	262	349	385	385
Macau, China	1	70	10	15	15	15
Chinese Taipei	999	1 024	1 337	1 463	1 556	1 556
Japan	8 123	10 620	13 416	19 584	23 466	576
Korea, Republic of	880	1 065	1 495	2 609	4 955	3 692
Malaysia	367	367	370	566	694	246
Philippines	120	124	174	261	408	197
Total	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	
Far East	12 796	17 744	23 747	35 855	46 844	
No. of countries/economies	16	16	17	17	21	
Total 14001:2004			In 15 countries		18 759	

Figure 2-7 ISO 14001 certifications by continents. Source: The ISO Survey of certifications 2005.¹⁷

2.3.4 Accreditation

Accreditation is a procedure that applies only to certification bodies, which is carried out by an accreditation body evaluating the competence of the certification agency (ISO, 2006). Certification organisations pay a fee to the accreditation bodies in order to be accredited. Accreditation bodies have a peer review process by international forums or cooperations (Rodgers, 2006). For example, the International Accreditation Forum (IAF), Interamerican Accreditation Cooperation (IAAC), European Accreditation (EA), International Laboratory Accreditation Cooperation (ILAC), and Pacific Accreditation Cooperation (PAC) (ISO, 2006).¹⁹

2.4 Experiences of ISO 14001

This chapter presents some case studies and surveys on the different dimensions of ISO 14001 in order to compare its relevant²⁰ findings with those of this thesis in the discussion (Chapter 6).

2.4.1 ISO 14001 implementation in Uruguay

Åsa Malmberg (2003) conducted a study on the implementation of ISO 14001 in three Uruguayan companies, recognising the problems and opportunities that developed. Her relevant findings are presented as follows:

Driving forces for implementation of ISO 14001

- Customer requirements, competitive advantage and to improve image;
- Requirement from the mother company and gains from systematisation and structure of environmental work;
- Genuine environmental concern;
- To lower operational costs and to reduce non-tariff trade barriers;
- Compliance with environmental legislation and requirements of financial institutions; and
- Pressure from local population and NGOs (Malmberg, 2003, p.24).

Benefits from implementation of ISO 14001

The benefits are presented in order of importance for the companies involved (Malmberg, 2003, p.39):

- Improvements of environmental impacts giving competitive advantages and green image;
- Cost reductions, safer environment for the employees and better preparedness for forthcoming regulation;
- Keeping customers and commercial benefits;
- The EMS creates confidence among stakeholders; and
- Requirements of financial institutions (easier to get loans).

¹⁹ For further information on accreditation bodies. [Online]. Available: <http://www.iso.org/iso/en/info/ISODirectory/intro.html> [2006, May 29]

²⁰ By relevant, the author refers to that information obtained leading to answer the research questions.

Problems with implementation of ISO 14001

The problems were also prioritised as experienced by the Uruguayan companies targeted (Malmborg, 2003, p.42):

- Cost of implementation;
- Deficient regulation and control at national level;
- Unclear guidance for ISO 14001, particularly on how to determine environmental aspects;
- Risk of focusing all resources on document, instead of following and developing the environmental objectives and the environmental performance; and
- Lack of commitment of certain employees, no motivation.

2.4.2 Implementing ISO 14001: benefits of certification

Susan Summers Raines (2002) surveyed 131 companies²¹ in 15 countries in order to find the motivations of developed and developing countries in seeking ISO 14001 certification.

Driving forces for ISO 14001

The following are the ranked motivation factors in the adoption of ISO 14001 for American companies (Raines, 2002, p.423):

- Desire to display environmental leadership, be a good neighbour (the strongest among all respondents);
- Potential economic savings and green marketing benefits;
- Requirements from parent company and requirements of trading partners;
- Desire to increase exports;
- Regulatory requirements and incentives and/or pressure from government regulators; and
- Desire to receive regulatory relief, and to reduce liabilities and insurance premiums.

Benefits from implementation of ISO 14001

- Cost savings due to environmental improvements, increasing environmental awareness among employees, managers and/or the community, and the ability to trade internationally;
- Improving relationships with regulators (Raines, 2002, p.421-426).

2.4.3 Implementation of ISO 14001 by SMEs globally

The ISO/TC 207/SC1/Strategic SME group conducted a global survey in 2005 on the use of EMS by small and medium sized enterprises (SMEs).

Driving forces for ISO 14001

- Customer requirements;
- Improved environmental performance;

²¹ 76 from developed countries and 55 from developing countries.

- Environmental compliance; and
- Increased employee commitment, motivation and management control (ISO/TC 207/SC1/Strategic SME group, 2005, p.37).

Benefits from implementation of ISO 14001

This survey reported the benefits identified by users (SMEs) and assisters (organisations or persons that assist SMEs on ISO 14001 implementation). These benefits are compared in Table 2-5.

Table 2-5 Benefits from implementation of ISO 14001 in SMEs globally, from users' and assisters' viewpoints.

Benefits identified by users	Benefits identified by assisters
Improved environmental compliance	Improved environmental compliance
Customer requirements	Improved environmental performance
	Improved employee commitment
Improved employee commitment	Customer requirements
Better management of a specific environmental issue	Meet regulatory needs
	Cost savings

Source: Table created by the author based on information of (ISO/TC 207/SC1/Strategic SME group, 2005, p.28).

Problems with implementation of ISO 14001

Table 2-6 presents the problems also differentiated by users and assisters.

Table 2-6 Problems with implementation of ISO 14001 in SMEs globally, from users' and assisters' perspective.

Problems identified by users	Problems identified by assisters
Lack of time	Lack of financial resources
	Lack of staff resources
Lack of staff resources	Cost of certification
	Lack of time
Lack of ISO 14001 know-how in the enterprise	Lack of top management support
	Cost of implementation

Source: Table created by the author based on information of (ISO/TC 207/SC1/Strategic SME group, 2005, p.29).

This survey also sought to identify the most difficult requirements of ISO 14001 to implement, notably the following:

- Identification of environmental aspects or impacts;
- Determination of significance of environmental aspects; and
- Meeting or exceeding regulatory requirements.

3 Experiences of the introduction and ongoing implementation of ISO 14001 – Interviews with developers

In order to obtain an insight from the Standard developers' perspective, to follow the historical development and to address issues surrounding ISO 14001 implementation, as well as to anticipate visions of the future progress of ISO 14001, semi-structured interviews were carried out with people that were involved in the creation of the Standard and that are still involved in its improvement. In total, 7 out of 14 potential interviews were conducted. Interviewees were from Australia, Germany, Japan, Sweden, UK and Zimbabwe.²²

Interviews were divided into four different periods of the “life-cycle” of ISO 14001:

- Negotiation process (1992 – 1995);
- 1-3 years after the Standard was launched (1996 – 1999);
- Current situation (2004 – 2006); and
- Future visions.

The interview format is presented in Appendix III.

3.1 Negotiation process (1992 – 1995)

This section of the interview aimed to get information on the role of the interviewees during the ISO 14001 establishment, their expectations, and some details and opinions on the Standard at that time.

3.1.1 Role of interviewees in the ISO 14001 establishment process and motivations for participating

Most of the interviewees were part of their countries delegation for the ISO/TC 207/SC1, the committee in charge of ISO 14001 standard development. The other interviewees were technical experts or industry representatives for their NSB within the working groups (WGs).²³ Some interviewees were/are also involved in the development of other ISO 14000 series standards. They were either selected or volunteered to participate as experts on EMS or other environmental issues. All interviewees mentioned that they participated largely because of their concern about the need for a system to do something for the environment.

3.1.2 Expectations on the environmental management system standard

The general expectation of ISO 14001 at that time was to create an EMS standard; to introduce an internationally accepted system similar to ISO 9001 (quality management

²² Persons that could not be contacted are from Argentina, Canada, China, Colombia, Indonesia, Egypt, Sweden, The Netherlands, UK, and USA. It would have been interesting was be able to interview them.

²³ In Chapter 2.2.1 and Chapter 2.2.2 is explained the function of ISO/TC 207/SC1 and WGs.

systems), but on environmental issues. On the basis that today the EMS standard exists and has been implemented by several organisations around the world, this general expectation of the ISO/TC 207 was fulfilled.

In addition, there were some personal expectations as follows, one of which has yet to be fulfilled:

- *“I expected that we might be able to develop a performance oriented standard rather than process oriented”*. Expectation not fulfilled.
- *“To follow the BS 7750”*. Expectation fulfilled.
- *“To contribute towards shaping the standard document keeping it simple and straight forward”*. Expectation fulfilled in the updated version ISO 14001:2004.

3.1.3 Topics of discussion

Question: Did you fight/discuss to get something into the standard?

The variety of answers to this question reflected some of the issues that might have been the subject of several discussions during the drafting of the Standard. It was pointed out that *“as just one vote per country was allowed and multiple people were present, opposing views arose”*. There was extensive discussion on the significance of environmental aspects, as well as the production of ISO 14004 simultaneously with ISO 14001 to enable easier understanding and implementation. There were also discussions on how interpretations of environmental performance would be made, how to improve the system or performance and how to address environmental education and awareness.

Another issue concerned legal and other requirements because countries with stringent systems *“did not want to lower the standards/performance they were applying already”*. Furthermore, environmental reporting as a requirement (“shall”) was one of the matters that was removed from ISO 14001 due to the negative opinions of some countries, especially the USA. It can be noted that public environmental reporting is mandatory according to EMAS i.e. environmental statement.

3.1.4 Countries in favour of and against ISO 14001 establishment

Interviewees did not suggest that any particular country or individual was against the establishment of ISO 14001 - some of them agreed that the USA was quite problematic, but this was more a result of the specific details of its legal system. As explained by two of the interviewees: as the USA has a strong legal regime, the US representatives thought that most of the issues addressed on the Standard were already regulated. In which case, then, an EMS would offer little additional help. The American representatives were also concerned that ISO 14001 would probably be misused to sue an organisation. One reason for this view was that companies would have to disclose their significant environmental aspects which may cause problems with the legal system.

Moreover, *“South American countries were somehow more aligned with USA than “supporting” their own views. However in the revision of the standard, political situations had changed, so their views were more independent from those of USA”*.

In general, it was said that European countries were the most positive on the ISO 14001 establishment with UK, Germany, Nordic countries and The Netherlands being highlighted in this respect. It was also suggested that the reasons behind this support was due to the existence of EMAS and the BS 7750. The USA and the European countries were considered by the interviewees to be the most active participant countries during the whole process of drafting the ISO 14001 standard. In addition, Canada, Brazil, Japan and Korea were recognised as very supportive countries.

3.1.5 Role of representatives from developing countries in the negotiation process

Interviewees commented that developing countries had participated but were not deeply involved; they also were underrepresented. The following reasons were given to explain this:

- *“Their role was difficult in ISO due to the lack of sufficient expertise to make a substantial contribution and frequently funding to attend”.*
- *“Their lack of involvement was because they do not have enough resources to fully participate”* (participation cost is addressed in Chapter 2.2).
- *“The reason could be although they were interested, it is a matter of maturity. As they are in a developing stage they did not see the need of an EMS”.*
- *“Representatives from developing countries were a bit quiet but mostly due to language difficulties. However, in written form were very active”.*

Interviewees also recalled the solutions already in place to avoid under-representation of developing countries. For example, *“nowadays developed countries e.g. Sweden, Switzerland, The Netherlands, among others, are giving some financial support to cover their expenses”.* There is also the special group for developing countries DEVCO.²⁴

3.1.6 Missing issues in ISO 14001:1996

Interviewees were mainly concerned that the first version was published with some unclear terms and definitions; this lack of explanations left room for different interpretations. Also, a number of inconsistencies between ISO 14001:1996 and ISO 14004:1996 were presented. Some of these particular issues referred to environmental reporting and 100% compliance with legal requirements.

3.2 Right after ISO 14001 was launched (1996 – 1999)

This section provides the first reactions to the ISO 14001 establishment.

²⁴ ISO/DEVCO is a policy committee on developing country matters. It has been assisting developing countries for 40 years to address their needs, primarily technological know-how, to increase their competitiveness on global markets. Its creation was a result of ISO's awareness of the difficulty for developing countries and economies in transition to participate in ISO and to establish their own national standardisation infrastructures (ISO, 2006). For further information: [Online]. Available: <http://www.iso.org/iso/en/comms-markets/developingcountries/iso+developingcountries.html> [2006, August 21]

3.2.1 Acceptance status – country specific

Question: How was the ISO 14001 standard received?

In addition to giving examples of the situation in their respective countries, interviewees provided answers with regard to other countries as well. Thus, the following presents the conditions of ISO 14001 country by country when it had recently been published.

- Australia: There was some degree of reservation from large companies on the basis of *why* they needed the standard. For example, those companies using the chemical industry standard “Responsible Care” did not see any value added in adopting 14001. Industry needed first to understand the role of the standard.
- Germany: 205 companies were already registered in EMAS. At the beginning there were more EMAS than ISO 14001 because EMAS is a political instrument. 300 – 400 companies had some kind of EMS in place.
- Japan: Dozens of companies had already BS 7750 and ISO/DIS certifications. ISO 14001 was well received due to their tradition of quality management systems.
- Sweden: Industry was very positive as a result of good promotion of ISO 14001 by TC 207 delegates. It had the most quantity of certificates in absolute values, as well as in the relation between certificates issued and number of industries.
- UK: As they had BS 7750 companies already had EMS. When BS 7750 was withdrawn certificates were then transferred.
- The Netherlands had many companies certified as a result of already having their own national standardisation infrastructure.
- Zimbabwe: ISO 14001 was very well received because there were representatives working on giving good explanations and promoting the standard among industries.

Interviewees stressed on the fact the level of welcoming depended on either how big the ISO/TC 207 delegation was or how well the standard was promoted among the industries.

3.2.2 Criticisms and positive findings

Examples of criticisms about ISO 14001 can be divided into criticism of the Standard itself, implementation and certification. Firstly, lack of understanding on how to use the Standard and what benefits it can provide, as well as the Standard’s wording. Secondly, the Standard focused on system improvements rather than performance improvements - many NGOs were concerned about this fact. However, *“this was an early misunderstanding that was spread around the world”*. Implementation was identified as costly due to the need for consultants and as being time consuming, especially for smaller firms. Thirdly, certification for SMEs is costly. There are some companies cheating the certification system, for example, there is a bazaar of certification e.g. “we can get you ISO 14001 certification in just 90 days”.

On the other hand, some positive findings were recognised. ISO 14001 resulted in a more systematic approach to environmental issues in many companies. The Standard provides a framework that could if well-implemented lead to a better environmental performance, to

the making of continual improvements and to attaining better efficiency. ISO 14001 has improved the discussion with local authorities when it comes to demonstrating how the company impacts the environment (i.e. legal compliance). Finally, ISO 14001 increased environmental awareness.

3.2.3 Problems associated with the Standard

Problems in developing countries were related to the fact that delegations did not represent their industries, they were rather delegates from the emerging NSB. Therefore, it was difficult to disseminate information to the local industry.

Another problem with implementation concerned understanding. In which case, it was necessary to educate business people, authorities and the public. Particularly in developing countries, as mentioned above, NSBs lacked the personnel and the resources to involve stakeholders in the ISO 14001 promotion.

More specifically, interviewees explained that people did not understand the identification of environmental aspects and significance assessment. Moreover, SMEs perceived the Standard as complicated. *“Companies generally only follow ISO 14001 which only have requirements, many times it is not considered ISO 14004 which should be the starting point, because it guides in an effective and efficient way the application of EMS”*.

In addition, it was mentioned that *“companies were too worried about certification which is not the intention of ISO 14001”*, as it is written in the Standard’s introduction that an organisation can be self-declared. It is important to point out that the certification process is made by third-party private organisation, so *“legal authorities cannot surveillance it”*. That is why accreditation of certification bodies exists.

3.2.4 The most positive effects of ISO 14001

The most positive effects shortly after ISO 14001 was launched were that the standard attracted worldwide attention leading to environmental awareness and responsible environmental behaviour. ISO 14001 provided a tool to work on an organisation’s environmental aspects by setting targets to continual improvement, thus proving an organisation’s environmental commitment.

3.3 Current situation (2004 – 2006)

The interviewees are still members of the committees they participated in during the creation (1996) and revision (2004) of the Standard. Some of them are working on other ISO 14000 series.

3.3.1 Opinions on the new version of the ISO 14001:2004 standard

There are some positive and negative views on the updated version of ISO 14001. Regarding positive judgments, interviewees judged that the Standard is *“much more streamline”*, it has simpler language, explains better the meaning of the requirements, has better consistency with ISO 14004:2004 and it is more aligned with ISO 9001:2000, and offers an improved management review. When it comes to criticisms, the strongest one is that ISO 14001 *“missed the opportunity to get the standard focus on performance improvements”* because it still offers only

limited guidance on what might be the methods or indicators to set for environmental performance.

It was also stressed that ISO 14001:2004 did not harmonise with ISO 14031:2000, which focuses on performance indicators (environmental, process and management). Finally, an extra comment given by some interviewees was regarding the lack of requirements to disseminate an organisation's environmental performance to the public by reporting. This was identified as a good way to make environmental performance improvements due to public pressures.

3.3.2 General reasons behind success or failure of ISO 14001 among different countries

Interviewees considered some factors that might be essential in achieving the successful implementation of ISO 14001. First of all, it was said that understanding of the Standard and the core work with environmental aspects is vital. In this respect, *“there is no need of bureaucratic system, ISO 14001 is possible to be implemented without much documentation (i.e. writing a lot), and EMS can be used in a simple way. Take action is the key”*. Then, choosing the most significant environmental aspects is crucial. It was suggested that it is indispensable to involve SMEs. Finally, interviewees agreed on the fact that the environmental consciousness of the country is directly proportional to proper implementation of ISO 14001. *“It is a cultural attitude”*.

Then, some examples that create differences for implementation between implementing countries were given. Since ISO 14001 is an international standard and has become a market requirement, its implementation is more relevant in a country where there are a lot of exports. *“That is mostly the case of industrialised countries”*. Another cause that enhances implementation is government incentives, e.g. regulatory relief.

There were also some possible reasons for failure suggested, including the following:

- *“EMS based on ISO 14001 does not always bring benefit for business. It sometimes means more cost which discourages EMS implementation especially in less international competitive countries”*.
- *“A problem of colonialism from foreign companies. It is easy to ask your supplier to be certified but they do not take into account if they can do it properly, e.g. Coca-Cola requiring ISO 14001 certification for its bottle supplier (a family company based)”*.
- *“Low uptake in developing countries is because of there is not customer's pressure, which it is a big driver”*.
- *“In countries where there is a lack of enforcement despite having good regulation, implementation of ISO 14001 is not so successful”*.

Table 3-1 presents the views of two interviewees on the possible reasons behind the number of certificates issued in some countries.

Table 3-1 Interviewees explanations of certification trends in some countries.

Country	ISO 14001 certifications		Explanation
	Dec. 2001	Dec. 2005	
Argentina	175	454	Uptake has been slow due to the economic situation.
Belarus	2	87	There is increasing mostly due to the European single market.
Serbia and Montenegro	12 (since 2003)	77	
Ukraine	1	55	
Cambodia	1 (since 2003)	1	<i>"There is not going well, industry is not interested"</i> .
Sudan	1 (since 2002)	-	
Nicaragua	1 (since 2004)	2	
China	1085	12,683	<i>"The increase is mostly due to the supply chain"</i> .
Colombia	41	275	<i>"Almost 90% of certificates are issued by foreign businesses"</i> .
Iran	34	407	400 certificates issued in the last 3 years. <i>"It is due to the oil companies"</i> .
Italy	1,295	7,080	Strong promotion by the government. In contrast, in Malaysia there is also strong promotion by the government but still there are not many certificates.
Malaysia	367	694	
Japan	8,123	23,466	There are two outstanding factors that have caused success: the role of the government and their cultural background. The government has promoted ISO 14001 through a successful campaign, has offered funding and has made pressure. <i>"Japanese people are very used to environmental regulation and to apply systematic approaches"</i> .
Netherlands	942 (1,162 in 2003)	1,107	<i>"No new certifications are issued"</i> .
Norway	298	452 (441 in 2004)	
Philippines	120	408	<i>"There was introduced a requirement of EMS in their regulation"</i> .
Saudi Arabia	6	28	<i>"Although it is a rich country, only have 17 certificates (as for December, 2004). They do not care about it"</i> .
Spain	2,064	8,620	It is the third in the world. Government has offered many grants.
Sweden	2,070	3,682	They are within the top 10 countries for ISO 14001 certificates, although there are less number of companies compared with the other 8 countries.
UK	2,722	6,055	

Source: Table created by the author based on interviews and data from Figure 2-7.

To sum up, success of ISO 14001 implementation depends on many factors which are different from country to country. For instance, implementation diverges due to economic, political, social and cultural aspects of the country involved.

3.3.3 Active businesses adopting ISO 14001

Question: Apart from multinational companies what other kind of businesses are adopting ISO more actively?

In general, multinational companies are the major drivers. Nevertheless, at national level there are some large companies that are adopting ISO 14001, but again their driver is sometimes to reach international markets. It was recognised that companies with more significant aspects or those with hazardous activities, *“the dirty companies”*, are implementing more actively ISO 14001, e.g. electric and electronics, and cement manufacturers, machinery businesses, construction and mining companies, and tobacco firms.

3.3.4 Problems with over documentation and lack of resources

Question: What is your view about over documentation and lack of resources (personnel, economic, time) for ISO 14001 implementation? How could this be improved?

Interviewees paid more attention to documentation, there were two outstanding comments:

- *“The key is how to make a complex issue simple, but the point is if it gets so simple that result as meaningless. Some external expertise is always required”.*
- *“Get rid of the idea of make documentation larger than the company is. Just to fit the standard into what the company does. Not over ruling”.*

As expected, the way to improve is with education and better guidance for implementation. Regarding resources it was mentioned *“government subsidies, tax relief to companies implementing ISO 14001”*.

3.3.5 Role of governments in ISO 14001 promotion

Question: What do you think about the role of governments to promote the ISO 14001 standard?

Interviewees identified many ways that governments can contribute to ISO 14001 adoption, as they play an important role in education. However, it was warned that it could be seen as a barrier to trade. Mostly it was said that governments should implement ISO 14001. Thus, they would understand the Standard and then be able to promote it effectively. Moreover, governments could ask for the uptake of ISO 14001 in their own supply chain. In this way, they would be *“greening their procurement”*. In addition, governments should make sure that regulatory relief for implementing organisation is included in regulation. Governments should also assist smaller firms.

Some examples were given as follows:

- In Japan 500 local authorities are certified to ISO 14001.
- In the USA 200 local authorities are certified to ISO 14001.

- Governments (e.g. UK, Finland) are publishing within their sustainability indicators (water, air pollution, emissions, etc) the number of EMS standard implemented.

3.3.6 ISO 14001 certification

Question: Do you think that certifying organisations could be stricter in developed countries rather than in developing ones?

Interviewees did not make the distinction between developing and developed countries; rather they stressed the fact that *“certification is a commercial activity, it is a business”* and competition between certification bodies due to lack of clients is making this process less reliable.

As an example, *“customers are frequently attracted by providing “training” or claiming their certification body adopts a more “practical approach” than its competitor a possible guise for a more relaxed approach”* or *“it is known that certificates can be bought in some countries”*. Furthermore, *“a significant number of certificates issued by certification bodies are from unaccredited certification body, it has been suggested that this may be as high as 60%”*.

3.4 Future visions of ISO 14001

3.4.1 Future role of ISO 14001

Almost all interviewees argued that ISO 14001 (EMS) will be a core part of social responsibility (SR), promoting a more integrated approach towards sustainable development. *“Companies will be more concerned about social issues; therefore there will be a greater uptake of social and environmental systems”*. With respect to certification it is thought that this will continue to grow, but there is uncertainty as to just what extent. Another view is quoted as follows, *“as the standard is a very valuable and useful document it needs to move on. It has not changed in shape in nearly 10 years but the environment has. This should be considered in the next revision.”*

3.4.2 Future improvements on implementation of the Standard

Question: If you got the chance to improve the implementation of ISO 14001 would you focus on (please motivate your answer): a) Contents of the standard? b) Training programmes and educational material? c) Internal and external environmental audits? d) Communication of environmental performance? e) Other?

Most of the interviewees agreed that the contents of the Standard were generally not a point of concern: it being said that the Standard is more or less fine and that *“there is no need to focus more on this”*. However, this can be contrasted with the last quotation of the previous chapter (Chapter 3.4.1). There were many comments with respect to training programmes. For example, *“... for some users the standard is complicated. More training and support from business sector organisations is needed, mostly to help to identify environmental aspects”*. Furthermore, other views that took into consideration the costs of training were to *“offer training suitable for those in charge of implementation”* and to provide the *“correct allocation of the amount of resources needed for implementation”*. In addition, the following comment could be categorised as a demand for educational material: *“improved documentation to help people to understand the intent of the standard”*.

Concerning internal and external environmental audits, it was pointed out that auditors must place a greater focus on environmental performance improvements rather than on system improvements. Finally, all interviewees declared that the communication of environmental performance is essential. *“Environmental performance should be opened to the public; it cannot any longer be an internal secret. It also makes it easier to check continual improvement”*. Some interviewees were in favour of making communication in written form – that is, environmental reporting.

3.4.3 Future way to address environmental issues in organisations

Question: What is your view of the future organisation of environmental issues in a company? What will be the role of the environmental manager?

There were two opposing views on this question: one perspective was that there will no longer be a need for an environmental manager, while the other position was that environmental managers will be more committed and their scope will be enlarged. Examples of these thoughts are quoted as follows:

For those who discussed the role of the environmental manager:

- *“In the future many organisations will combine management systems as environmental, health and safety, social, etc, having a larger scope”*.
- *“The environmental manager will deal with legislative compliance and identify opportunities to reduce costs in terms of improving resource efficiency, reducing emissions and corporate social responsibility (CSR) may also play a role”*.

One interviewee declared that:

- *“Everyone will become very familiar with ISO 14001 so that it is no longer a one person responsibility, all employees/stakeholders will play a role in environmental management.”*

3.4.4 Future certification of ISO 14001

Question: Do you think that ISO 14001 certification will continue to grow as a market requirement? If so where?

It was agreed that certification is certainly a market requirement. It was also stressed that it is a difficult matter to predict, it lacking a worldwide trend. As a result of there being *“expected by today 150,000 ISO 14001 certifications and there is only 103,000, ISO 14001 is not growing as fast as ISO 9001, although is increasing”*. In some countries certification is still growing, in others it remains constant and in others *“no new certifications are issued e.g. in Netherlands, Norway and Sweden”*.

In addition, it was stated that certification *“will be a function of how credible certification bodies are. If the credibility of certification continues to decline then the market will not grow as certification needs to be seen to add value”*. Finally, alternative systems might displace certification: for instance, a *“diploma system”* or *“a network of self-declared organisations”*.

3.4.5 ISO 14001 integration with other management system standards

There were views both in favour and against the integration of management systems standards (ISO 14001, ISO 9001 and OHSAS 18001).

Arguments in favour pointed out that the revision of ISO 14001 and ISO 9001 has already been enacted in parallel. Despite the fact that some interviewees are in favour of integration, they are aware that it will not be possible in the near future (10 years), because it is quite difficult to find just one agreed standard. Further, it was declared that *“the primary benefactors of the integration of those standards would be SMEs. They will have a very clear picture of requirements. It would be easy and functional”*.

On the other hand, some interviewees believe that integration *“will not be widespread and will be perceived to be too complex”*, or *“will depend on certification bodies”*. Finally, there was a strong view opposing integration: *“I hope not. Each standard addresses different risks that do not necessarily apply to every kind of business. There are some core elements that apply to all as they are management standards (e.g. keep records, documentation) but the nature of each standard is totally different”*.

3.5 Summary of findings

3.5.1 Benefits from ISO 14001

Developers referred to ISO 14001 implementation benefits in a more general way. The author prioritises the benefits identified by the interviewees according to the number of times mentioned, and the emphasis given when commenting on it, as follows:

- The standard attracted worldwide attention leading to environmental awareness and responsible environmental behaviour;
- ISO 14001 provides a framework, a more systematic approach to environmental issues that when well implemented leads to better environmental performance, the making of continual improvements and the attaining of greater efficiency; and
- Implementation of the Standard has improved discussions with local authorities since organisations are complying with legal requirements.

3.5.2 Problems with ISO 14001

Interviewees mentioned problems related to the Standard, implementation and certification of ISO 14001.

The Standard

- Wording and lack of understanding on how to use the Standard and what benefits it can provide;
- Focus on system improvements rather than performance improvements;
- Underrepresentation of developing countries made difficult to promote the Standard. Lack of human (promoters from i.e. NSBs, local industry if it had participated during drafting) and economic resources to provide a comprehensive education and training; and

- Lack of promotion of ISO 14004.

Implementation

- Costly due to the need for consultants, and time consuming, especially for smaller firms;
- Misinterpretations of the Standard and difficulties in identifying and assessing the significance of environmental aspects;
- Too much focus on certification;
- Lack of government incentives; and
- Over documentation leading to inexperienced implementers.

Certification

- Certification for SMEs is costly; and
- Credibility of certification. The number of unaccredited certification bodies is increasing.

3.5.3 Future of ISO 14001

The future of ISO 14001 is based on its role and potential improvements, its participation in future means of dealing with environmental issues, its integration with other management standards and the future of certification.

Developers believe that ISO 14001 in the future will:

- Be a core part of an integrated approach with social responsibility (SR) towards sustainable development;
- Continue to grow as a market requirement, and the number of certificates will potentially decrease *only* if its credibility continues to decline;
- Involve more training and educational material, as well as require competent internal and external auditors; and
- Be more integrated or combined with other management standards, i.e. ISO 9001 and OHSAS 18001. Nevertheless, it seems that there is *not* the potential to integrate them to just one standard.

4 Perception of ISO 14001 in a global perspective – Questionnaire to IIIIEE Alumni Network

In order to collect opinions and experiences of implementation of ISO 14001 globally, an emailed survey was sent to 319 people from 72 countries, members of the IIIIEE Alumni Network. The answering period was between July 1st and July 21st 2006, obtaining 26 responses.²⁵ Although the questionnaire was aimed at those members who have worked with ISO 14001, three respondents had no experience of ISO 14001; however they did have sufficient knowledge regarding implementation in their respective countries.

The questionnaire was divided into four sections namely personal information, truths or myths about ISO 14001, current situation of ISO 14001 and the future of ISO 14001 (see Appendix IV). The type of question and their purpose, as well as the method of presenting the data obtained from responses, are explained as follows:

Type of questions

- Open questions;
- Multiple choice questions;
- Prioritising questions: to recognise the most important features of a specific topic. Options given were ranked by respondents. Answers are presented by one graph for each option of the top four options, in order to show the distribution of the answer that gave the mean, hence, its grade; and
- Evaluating statements: to evaluate certain statements found during the literature review. The evaluation consisted of choices between different grades of agreement or disagreement, i.e. strongly disagree, slightly disagree, neither disagree nor agree, slightly agree, and strongly agree.

When answers for multiple choice questions and the evaluation of the statements are positive to ISO 14001, it is illustrated in green on the graph. On the contrary, when they are negative to ISO 14001, it is represented in red.

Data presentation

The following chapters present the results and analysis of the questionnaire, classified by topics. Firstly, questions or statements are presented and results are provided through an explanation of the total responses; so the 26 total answers represents 100%, with 17 from developed countries being 65% and the remaining 9 from developing countries corresponding to 35%.²⁶ Then, a graph illustrating the responses categorised by developed countries and developing countries is presented when possible. Next, some extra comments made by respondents are mentioned if necessary. Finally, the author's clarifications are given when required. Further, in Chapter 6 the main findings are discussed.

²⁵ 24 responses coming from the Network members and 2 from outside the Network. These respondents were asked by Alumni Network members to fill in the questionnaire.

²⁶ For further illustration see Table 4-1

4.1 Personal information

The first section of the questionnaire asked for personal information in the form of nationality and work experience, essential information to categorise their responses by developed and developing countries and to establish which perspective they view ISO 14001 implementation from.

Table 4-1 shows the number of responses for each country, grouped by developed and developing countries. It also shows the number of ISO certifications based on Figure 2-7.

Table 4-1 Respondents nationality categorised by developing and developed countries.

Country		Number of responses	Number of certifications		Country		Number of responses	Number of certifications	
			Total	Of which 14001:2004*				Total	Of which 14001:2004*
Developing countries	Argentina	1	454	454	Developed countries	Australia	1	1778	1778
	Czech Republic	1	2122	57		Canada	2	1636	
	Colombia	1	275	60		Germany	2	4440	4440
	Egypt	1	384	384		Greece	1	254	254
	India	2	1698	859		Iceland	1	6	
	Lithuania	1	208	63		Spain	1	8620	8620
	Mexico	2	422			Sweden	3	3682	2247
	Total	9				Netherlands	1	1107	254
Total responses (100%) = 26						UK	1	6055	3189
Developed countries responses (65%) = 17						USA	4	5061	
Developing countries responses (35%) = 9						Total	17		

* By now all old certificates should have been transformed to ISO 14001:2004.

Note: Economies in transition have been regarded here as developing countries.

Respondents have been working with ISO 14001 as **implementers** either in a company or a public organisation, as environmental consultant or auditor, and as academic researcher or teacher. Just one respondent has worked as a **certifier**, as environmental auditor for a certification body. Another respondent has worked as a **developer**, as head of the delegation participating in ISO/TC 207 that created the Standard. The respondents who have been **certifier** and **developer** have both also worked as **implementers**; it is therefore considered that the questionnaire represents their views as **implementers**.

4.2 Current situation of ISO 14001

This section address issues related to promotion, driving forces, benefits, problems, and the success or failure of the implementation of ISO 14001. In addition, credibility and current practice of ISO 14001, and environmental management standards integration will be considered.

4.2.1 Success or failure of implementation of ISO 14001

Question: What do you think of ISO 14001 implementation in your country?

The implementation of ISO 14001 was considered successful by 60% of the total respondents (including developing and developed countries), whereas 20% regarded it as a failure. In Figure 4-1 the responses categorised by developing and developed countries are presented. Surprisingly, respondents from developing countries thought that there was no “failure” in implementation of ISO 14001, while 67% declared it to have been “quite successful”. On the other hand, responses from developed countries demonstrated that the implementation of ISO 14001 is considered to have been “very successful” and “slightly failure” to the same degree (see Figure 4-1).

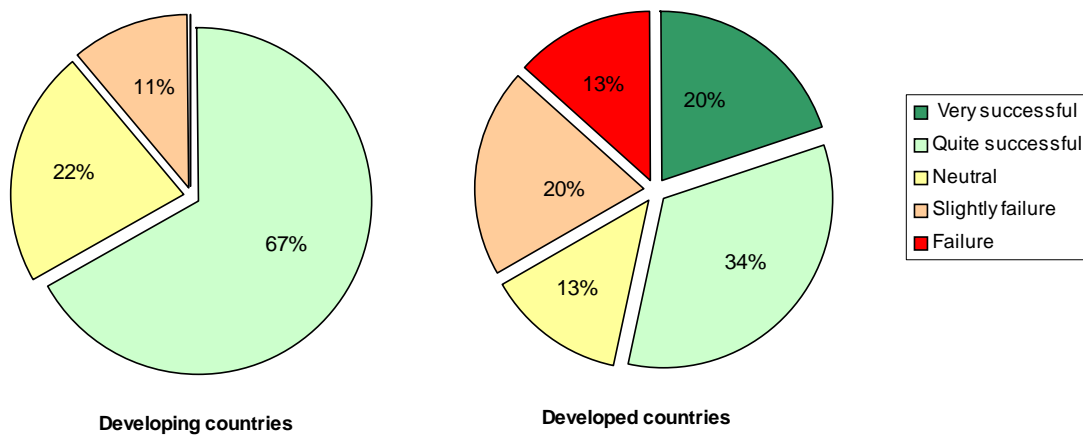


Figure 4-1 Success or failure in implementation of ISO 14001 – comparing developing and developed countries.

The respondents’ comments revealed that success or failure in implementation is related to the number of certificates issued in their countries.

4.2.2 Organisations promoting ISO 14001

Question: How do you prioritise the organisations that actively promote ISO 14001 in your country?

There were given 9 options to choose from: a) the national standards organisation, b) leading companies (fore runners), c) mass media, d) universities and other institutions for education, e) consulting companies, f) governmental institutions, g) certification bodies, and h) customer demands.

The respondents graded the above options on a scale of 1 – 9, ranging from organisations promoting ISO 14001 less actively (1) to those which do so more actively (9). Figure 4-2 depicts the top four options chosen by respondents.

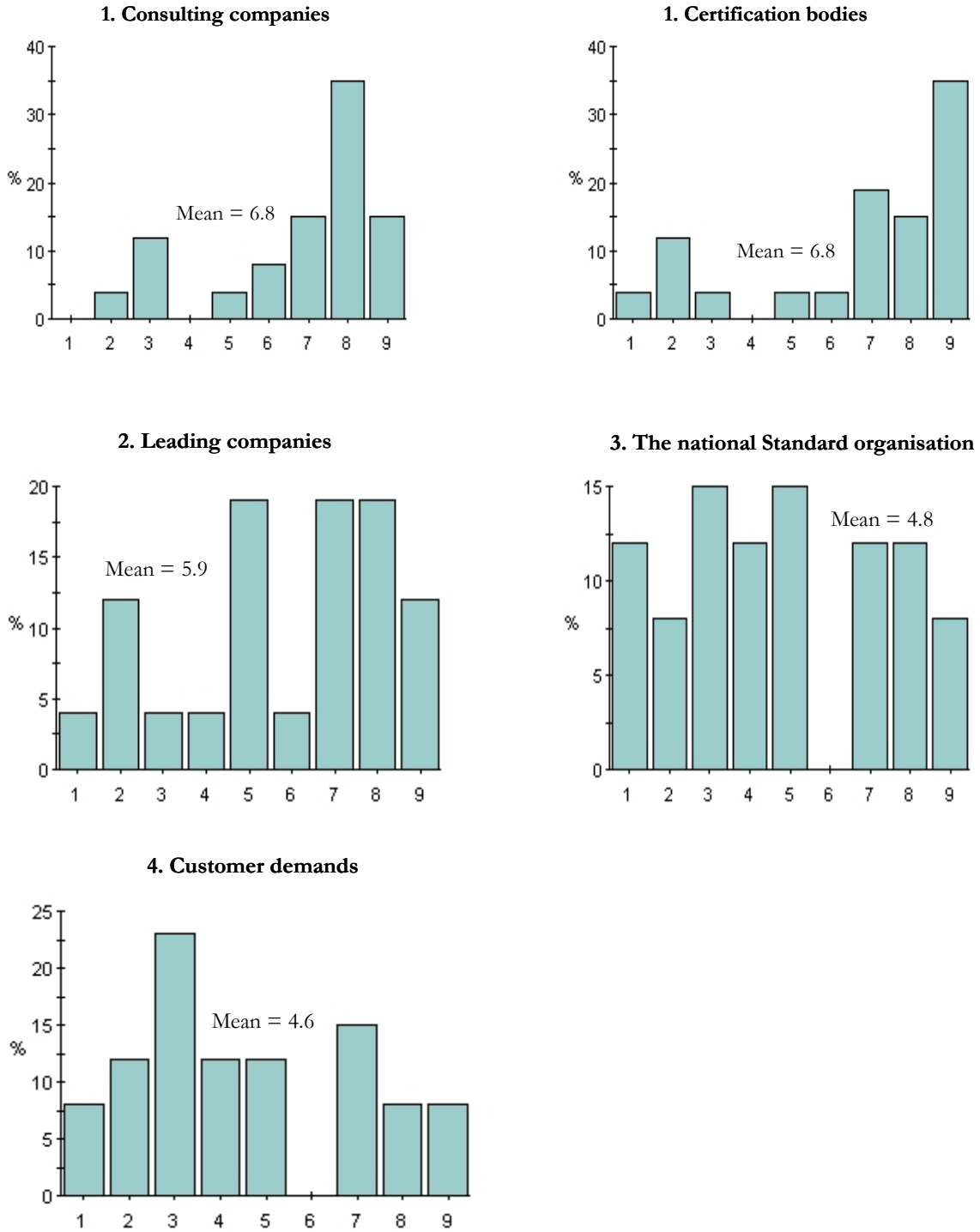


Figure 4-2 Top four organisations promoting most actively implementation of ISO 14001.

According to the respondents' answers it seems that promotion is generally led by business interests such as consultant firms and certification bodies, as ISO 14001 represents the core business for both organisations. The views of the author on the other options are as follows: governmental institutions were the fifth, graded as 4.2, one of the key actors by far in creating incentives to enhance implementation. Mass media obtained the lowest grade (2.5), demonstrating that one of the most successful means of disseminating information might not have been extensively considered to promote ISO 14001 implementation.

4.2.3 ISO 14001 driving forces

Question: What are the main driving forces behind ISO 14001 implementation (based on your own experiences and/or issues that are discussed in your country)?

The following options were given: a) gains from systematisation and structure of environmental work, b) genuine environmental concern, c) customer requirements and competitive advantage, d) to lower operational costs, e) improve image, f) to reduce non-tariff trade barriers (restrictions to imports which are not in the usual form of a tariff, e.g. quotas, restrictive licences, import bans, seasonal import regimes, product classification, unfair customs procedures, among others), g) requirements of financial institutions, h) requirement from the mother company, and i) environmental legislation.

Figure 4-3 presents how respondents prioritised the above options.

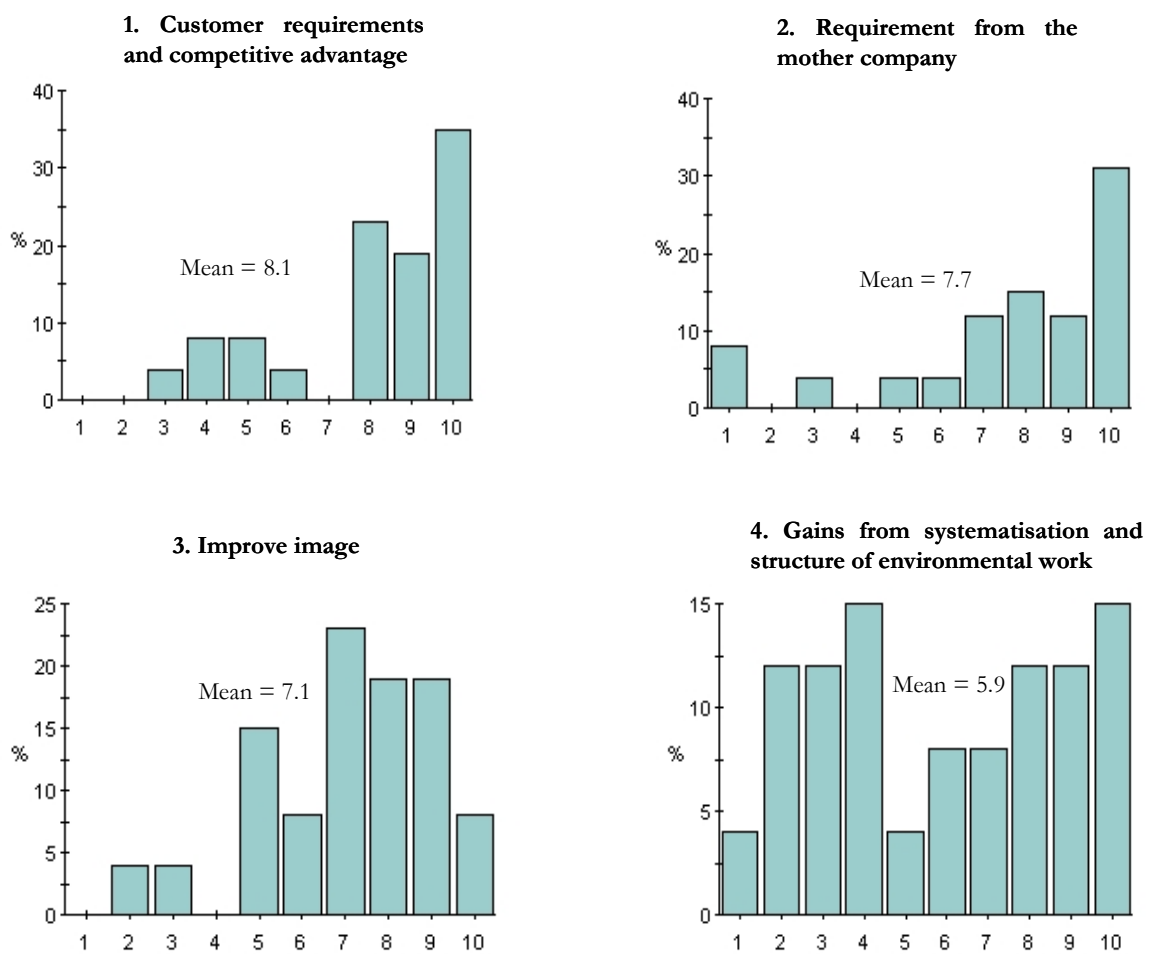


Figure 4-3 Top four driving forces for ISO 14001 implementation.

Responses were aligned with those presented in the literature. Drivers identified by respondents were not different from those expected. Among the lower grades, “genuine environmental concern” (5.1), “to lower operational costs” (5), “to reduce non-tariff trade barriers” (4.8), “environmental regulation” (4.7); the “requirements of financial institutions” were the absolute lowest (4). The author believes that the strengthening of this driving force

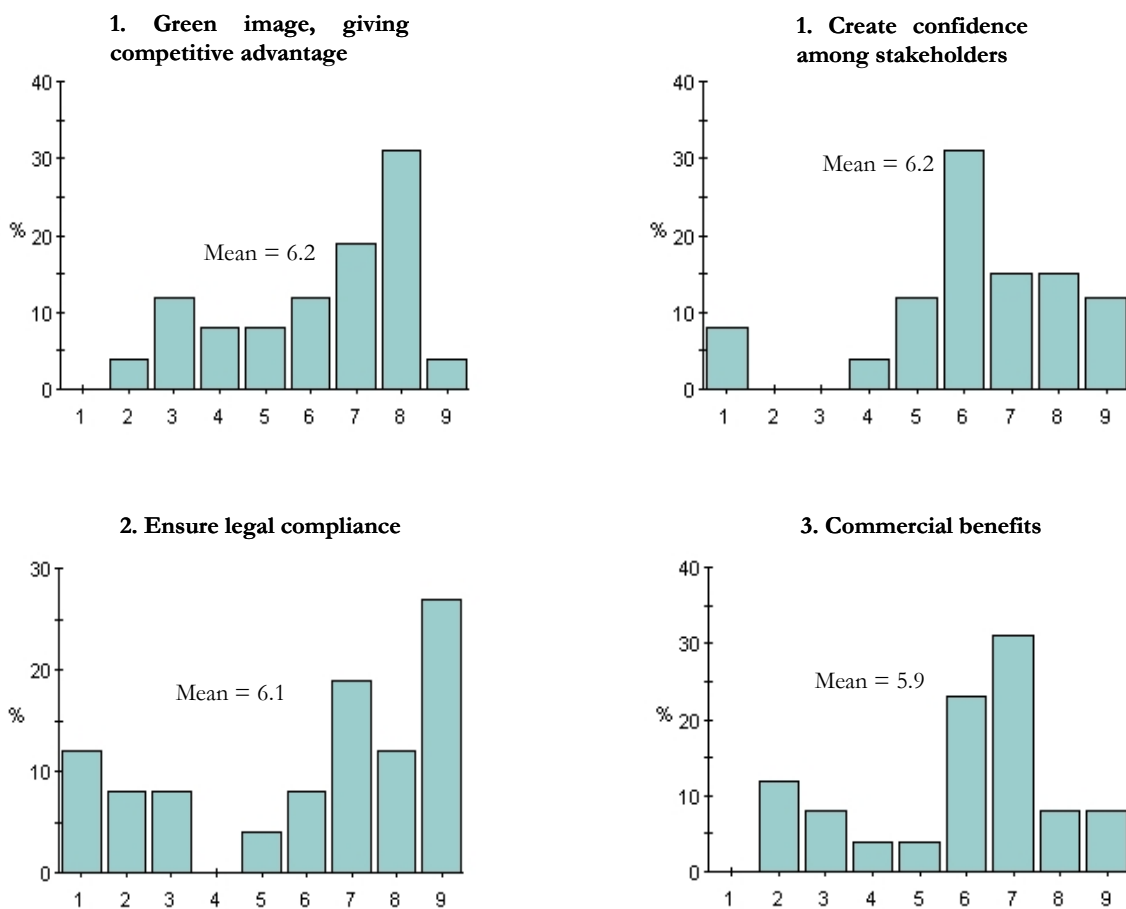
would contribute in some degree to increased implementation, as aid from financial institutions (i.e. banks and insurers) is essential for an organisation's existence.

4.2.4 Benefits from ISO 14001 implementation

This chapter presents one question and two evaluations of statements related to benefits gained from implementing ISO 14001.

Question: What are the benefits from implementation of ISO 14001 (based on your own experiences and/or issues that are discussed in your country)? (1 = the least beneficial; 9 = the most beneficial).

Respondents were asked to choose among: a) cost reduction, b) satisfied customers, c) commercial benefits, d) green image giving competitive advantage, e) less environmental impacts, f) create confidence among stakeholders, g) ensure legal compliance, and h) benefits from the government, i.e. regulatory relief, reduction of inspections, incentives for implementation (e.g. technical assistance, free training, cash subsidies). Figure 4-4 shows the most beneficial gains from the implementation of ISO 14001.



4. Satisfied customers

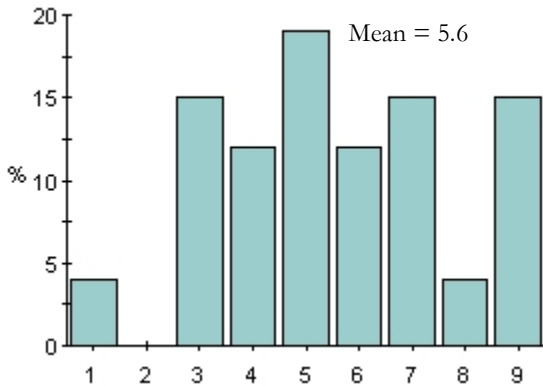


Figure 4-4 Top four benefits from implementation of ISO 14001 standard.

The author reflects on the benefits prioritised by respondents that implementation of ISO 14001 helps the organisation to improve its marketing. The lowest benefits identified were those from the government (regulatory relief, reduction of inspections, incentives for implementation, etc), receiving a grade 4. The involvement of the government is another field of importance given its potential to create effective incentives to the enactment of environmental work. The other options, “less environmental impacts” and “cost reductions” were graded by 5.4 and 5.1 respectively. Furthermore, one respondent pointed out that another benefit from the implementation of ISO 14001 is the increased awareness among employees.

Statement: Many organisations are satisfied with the implementation of ISO 14001 and claim that they have improved their environmental performance and saved resources and money.

77% of the respondents agreed that the above benefits resulted from ISO 14001 implementation. Respondents from developed countries did not disagree with the statement, with only 2 responses from developing countries choosing “slightly disagree”, as illustrated in Figure 4-5.

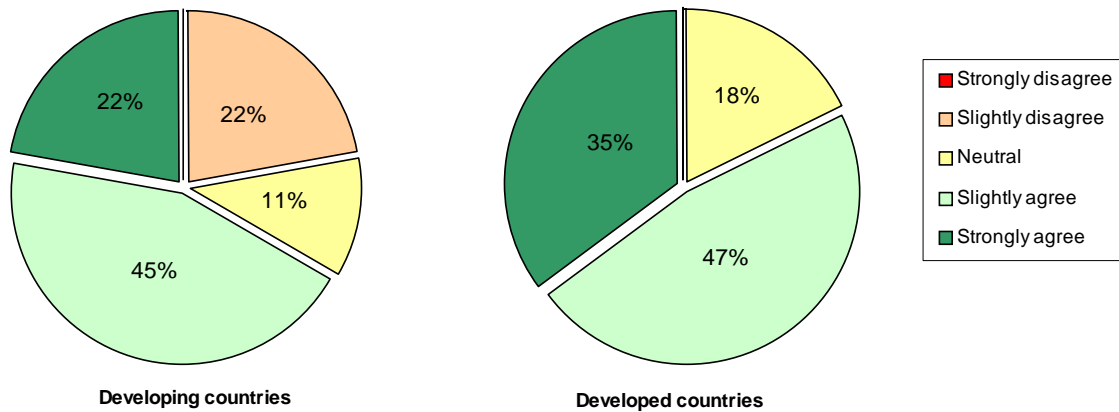


Figure 4-5 Responses to the statement: “Many organisations are satisfied with the implementation of ISO 14001 and claim that they have improved their environmental performance and saved resources and money”.

Respondents stressed that the commitment of the top manager is essential to drive ISO 14001 implementation to real environmental performance improvements, through the running of environmental programs planned and designed to achieve the targets set. Failing this commitment, implementation would serve only to increase documentation and the administrative burden. This was associated with an incompetent implementer.

Statement: The environmental management standard ISO 14001 contributes to sustainable development.

The majority of the total responses (73%) agreed with this statement, but mostly in developed countries as depicted in Figure 4-6.

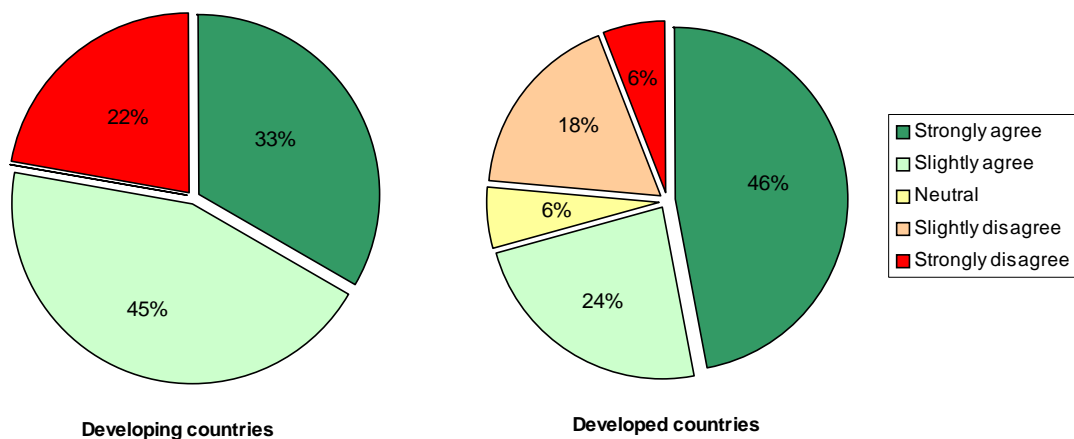


Figure 4-6 Responses to the statement: “The environmental management standard ISO 14001 contributes to sustainable development”.

Every comment given pointed out that the continual improvements element of EMS contributes to the environmental pillar of sustainable development; it was also mentioned that ISO 14001 should be integrated with social, health and safety, and risk issues. “Sustainable development cannot occur without a mechanism to organize action. The EMS is a necessary prerequisite for sustainable development”.

4.2.5 Problems with ISO 14001 implementation

This chapter presents two questions and four evaluations of statements concerning the problems faced when implementing ISO 14001.

Question: What are the problems related with ISO 14001 (based on your own experiences and/or issues that are discussed in your country)?

Options were given to be graded between 1 and 9, from the least problematic to the most problematic, as follows: a) the system does not guarantee any improvement in the company’s environmental performance, b) costs of implementation and maintenance of the system, c) demanding documentation, d) unclear guidance and difficult to understand the different requirements, e) internal and external auditors are not competent enough, f) corruption could bias the certification process, g) the fact that ISO 14001 does not require going beyond legal requirements and h) the possibility of “hiding” environmental improvements in order for a company to be in compliance with the requirement of continual improvement.

Figure 4-7 illustrates the four most common problems with implementation of ISO 14001 with the highest grades reported by respondents.

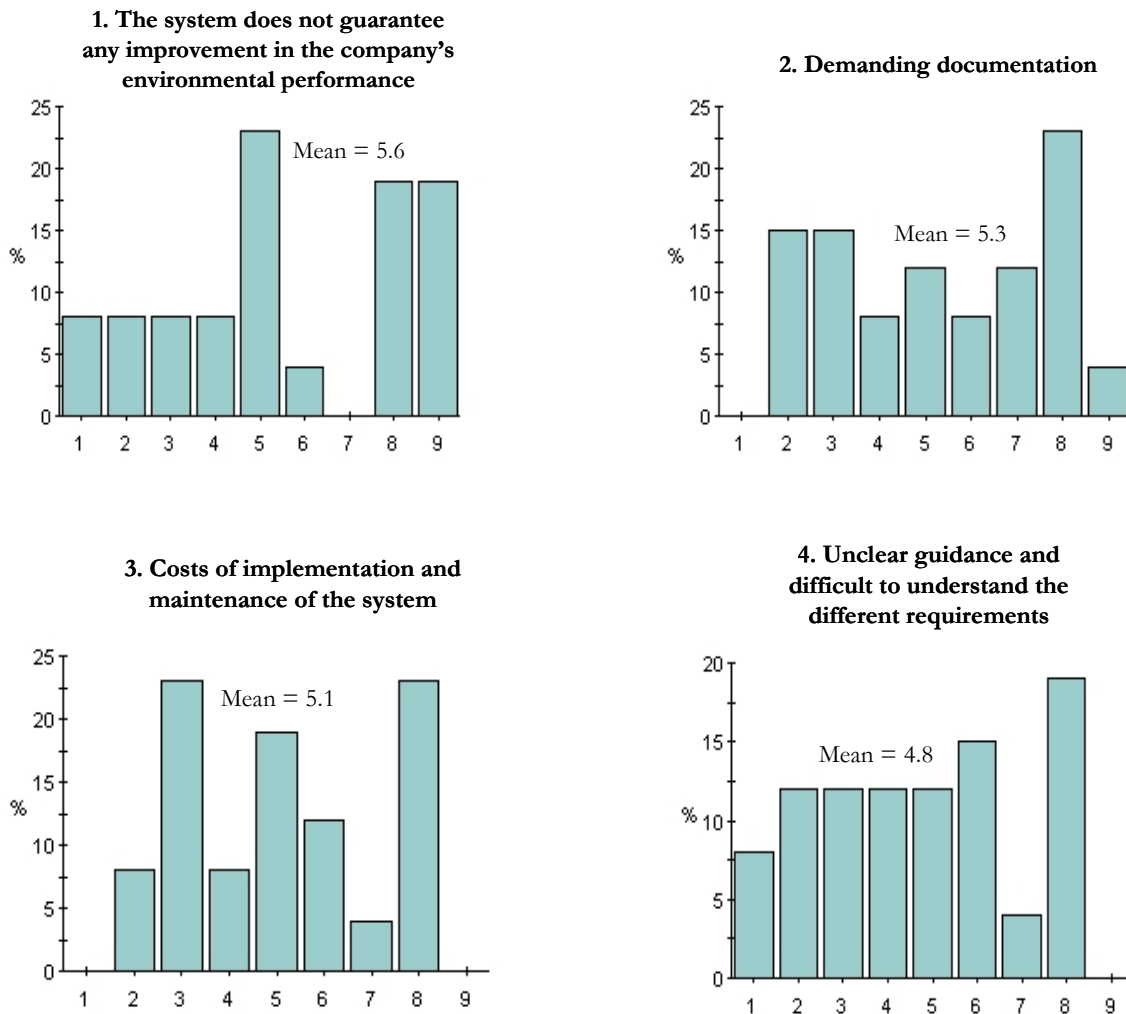


Figure 4-7 Most problematic issues with implementation of ISO 14001.

The issues considered as least problematic obtained the following grades: “the possibility of “hiding” environmental improvements in order for a company to be in compliance with the requirement of continual improvement” (4), “corruption could bias the certification process” (3.6) and “the fact that ISO 14001 does not require going beyond legal requirements” (3.2).

Question: Evaluate the greatest problems that developing countries have been facing with the ISO 14001 standard. (The least problematic = 1, the most problematic = 4.)

The four given options were: a) cost of implementation, b) lack of enforcement of environmental legislation, c) demanding documentation and d) lack of method/criteria to assess the environmental aspects' significance. Respondents graded these problems according to rank; Table 4-2 presents the mean grade accorded to each problem.

Table 4-2 Evaluation of some problems with implementation of ISO 14001 in developing countries.

Implementation problems	Grades
Lack of enforcement of environmental legislation	2.8
Cost of implementation	2.5
Demanding documentation	2.3
Lack of method/criteria to assess environmental aspects significance	1.9

There were some comments given to this question, quoted as follows:

- “The problem is not the standard. It is the incentives, social imperatives and maturity relative to environmental issues”.
- “The greatest problem is the lack of market rewards”.

Statement: Implementation costs of ISO 14001 are high, which consequently constitutes a barrier for small and medium sized firms globally.

Developing countries’ respondents revealed greater agreement with this statement than the responses from developed countries (78% and 55% respectively). Respondents from developed countries saw more distributed answers for the disagreement and neutral options, as depicted in Figure 4-8.

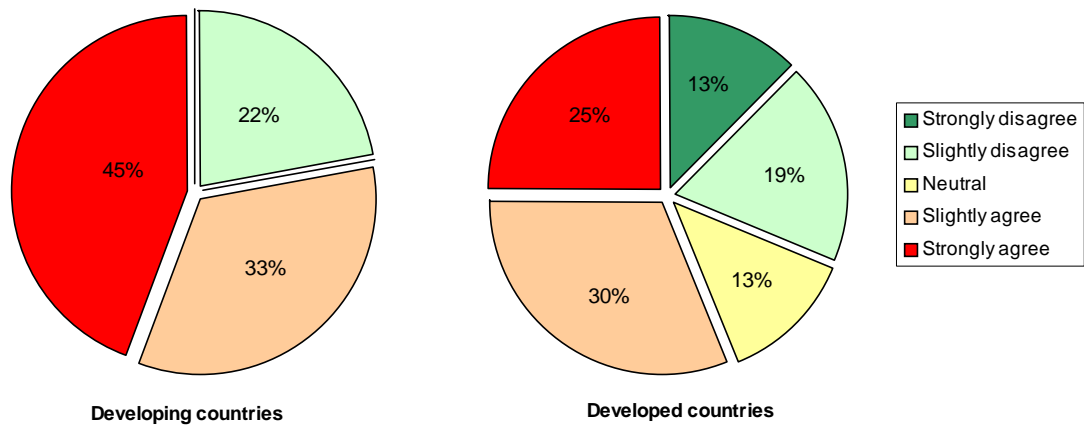


Figure 4-8 Responses to the statement: “Implementation costs of the ISO 14001 are high, consequently constitutes a barrier for small and medium sized firms globally”.

Those who gave comments in their answers despite of had agreed with the above statement or not, they also considered that implementation costs are directly proportional to the correct application of the standard site specific.

Statement: The identification and assessment of environmental aspects has been one of the most difficult requirements of ISO 14001 implementation. Especially when it comes to the criteria needed to evaluate the environmental aspects’ significance.

Figure 4-9 demonstrates that for both respondents from developing and developed countries this requirement represents a marked level of difficulty for organisations. 60% of the total responses agreed with the statement.

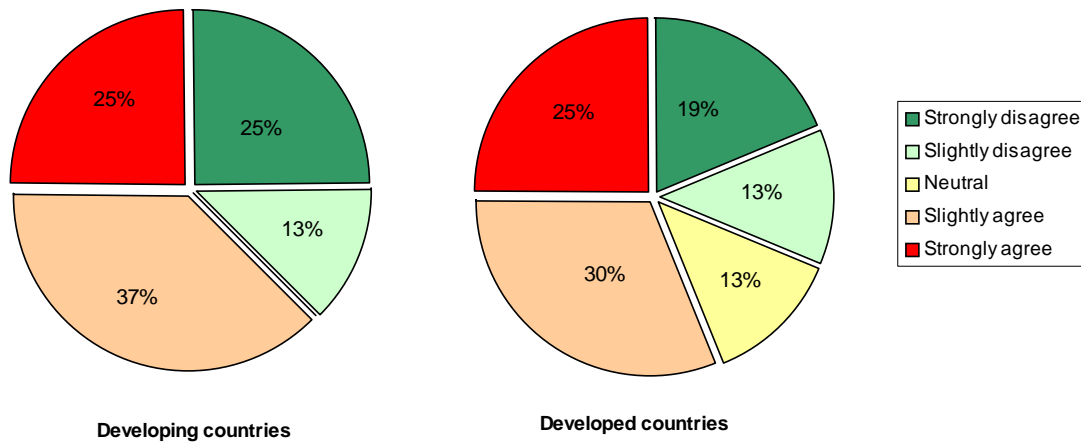


Figure 4-9 Responses to the statement: “The identification and assessment of environmental aspects has been one of the most difficult requirements of ISO 14001 implementation. Especially when it comes to the criteria needed to evaluate the environmental aspects’ significance”.

The main reason respondents gave for the difficulty in identifying and evaluating environmental aspects and their significance is related to the lack of understanding and/or lack of precise explanation of definitions presented in the ISO 14001 document itself. Other comments suggested that the competence of organisation’s environmental manager or the need for consultants were also issues of relevance. It was also mentioned that the identification of environmental aspects requires a “field trip”, it not being possible through “management people sitting in a room trying to figure it out”.

Statement: In developing countries and economies in transition, the wording and difficult language of the ISO 14001 make it hard to implement the standard.

Not surprisingly, respondents from developing countries (45%) were more concerned about the difficult language of the Standard than respondents from developed countries (27%) (see Figure 4-10). Nevertheless, and unexpectedly, disagreement with the statement was similar across the two categories. The difference was made by more neutrality among developed countries’ respondents (27%).

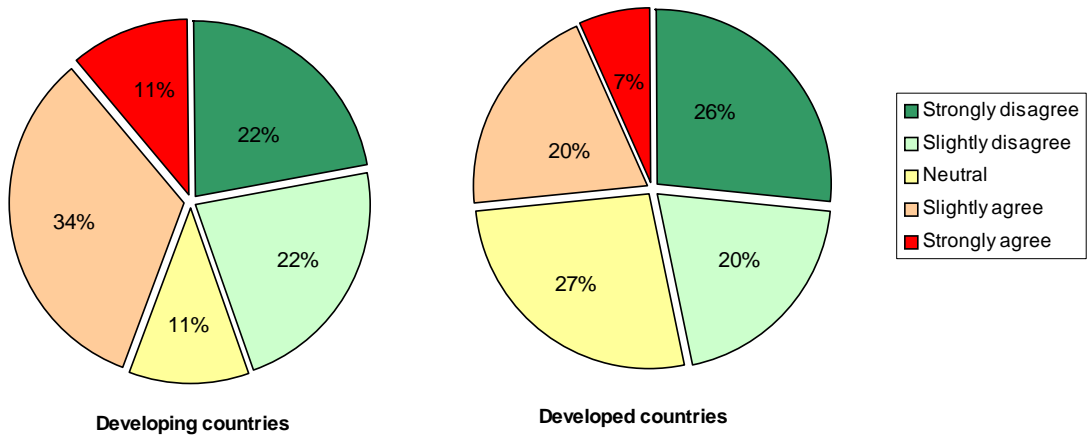


Figure 4-10 Responses to the statement: “In developing countries and economies in transition, the wording and difficult language of the ISO 14001 makes it hard to implement the standard”.

Both groups of comments concerning agreement or disagreement with the statement related this problem to the way the Standard is interpreted. Another important issue from respondents’ comments was the fact that some organisations in developing countries have not even considered EMS and environmental protection as a priority in their businesses, therefore there is not enough knowledge of some of the key concepts. This could be called a lack of “maturity” in this matter.

Statement: Developing countries and economies in transition have economic and political disadvantages in implementing the ISO 14001 standard.

Respondents from developed countries reported mostly neutrality – the most popular answer (35%), as a result of a lack of experience in the situations of developing countries. However, the developed countries’ responses were more in disagreement with the statement (47%) than agreement (18%). This is showed in Figure 4-11. On the other hand, developing countries declared similar levels of disagreement and agreement (respectively, 45% and 44%).

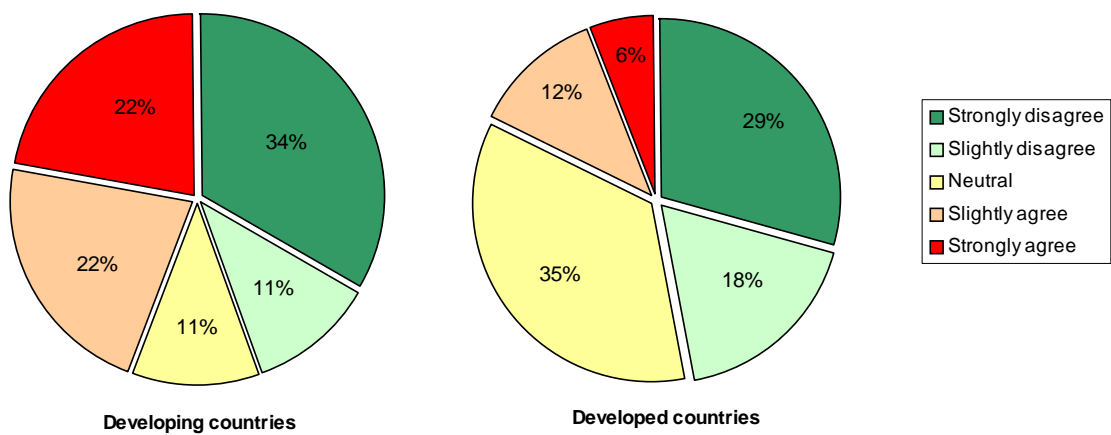


Figure 4-11 Responses to the statement: “Developing countries and economies in transition have economic and political disadvantages in implementing the ISO 14001 standard”.

Respondents that agreed with the statement related it to the economic issue, i.e. lack of economic resources. Nevertheless, it was pointed out that obtaining certification would open markets, thus increasing exporting ability. Regarding the political situation, this was linked to the lack of proper incentives from the government, and of the relevant environmental authorities to implement EMS in organisations.

4.2.6 Credibility of ISO 14001

Question: What do you think is the credibility of the ISO 14001 in your country?

From the total of the responses, 52% evaluated ISO 14001 credibility as “medium”, 40% as “high” and 4% as “low”. Figure 4-12 shows, not surprisingly, that the credibility of ISO 14001 in developed countries is higher than in developing countries (50% and 25% respectively). Medium credibility is higher in developing countries (75%) than in developed ones (44%). Only 4% (one respondent) considered ISO 14001 as having low credibility.

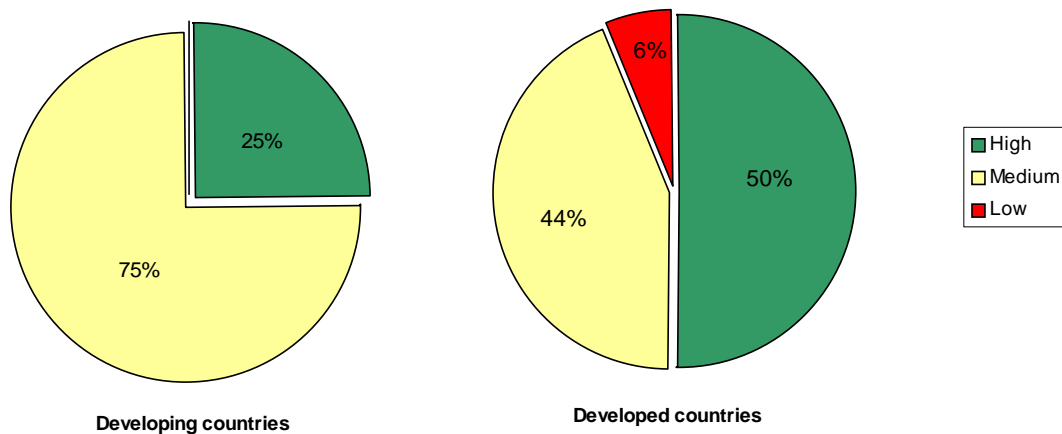


Figure 4-12 Credibility of ISO 14001 in developing and developed countries.

Responses from the Czech Republic, Egypt, Germany, Island, Sweden,²⁷ USA²⁸ and UK considered ISO 14001 as having high credibility. Medium credibility answers were from Argentina, Australia, Canada, Colombia, Greece, India, Mexico, Netherlands, Sweden and USA.

4.2.7 Formality of the current practice of ISO 14001 compared with the past

Question: ISO 14001 was introduced 10 years ago. Have you noticed any difference in how the standard is currently applied compared to past practice (i.e. 5-10 years ago)?

Figure 4-13 shows that many respondents (31%) do not know about the historical development of the standard. This is explained by the fact that 53% of the respondents have 1-8 years of work experience, 33% have been working for 9-11 years and only 4% have work experience of 12-14 years. ISO 14001 is considered to be practised less formally nowadays

²⁷ 3 out of 4 responses from Swedish IIIEE Alumni Network members.

²⁸ 2 out of 4 responses from American IIIEE Alumni Network members.

(35%). However, 11% of the respondents believed that the current use of ISO 14001 is applied more formally than it was previously.

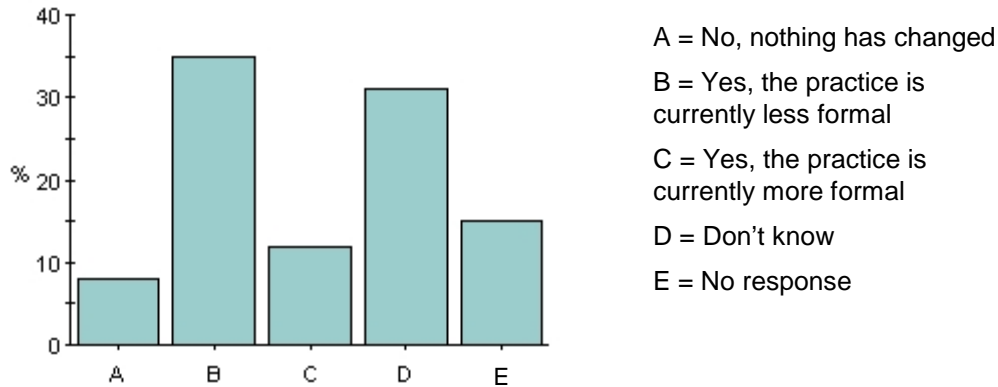


Figure 4-13 Difference between the past and the current practice of ISO 14001.

4.2.8 ISO 14001 integration with other management systems standards

Statement: It is becoming more common for organisations to combine or integrate ISO 14001 with systems for quality (e.g. ISO 9000) and health and safety (OHSAS 18001).

73% of the respondents agreed with this trend. Surprisingly, negative answers were given only by respondents from developed countries. On the other hand, there was no disagreement, not even neutral opinions from developing countries’ responses, as can be seen in Figure 4-14.

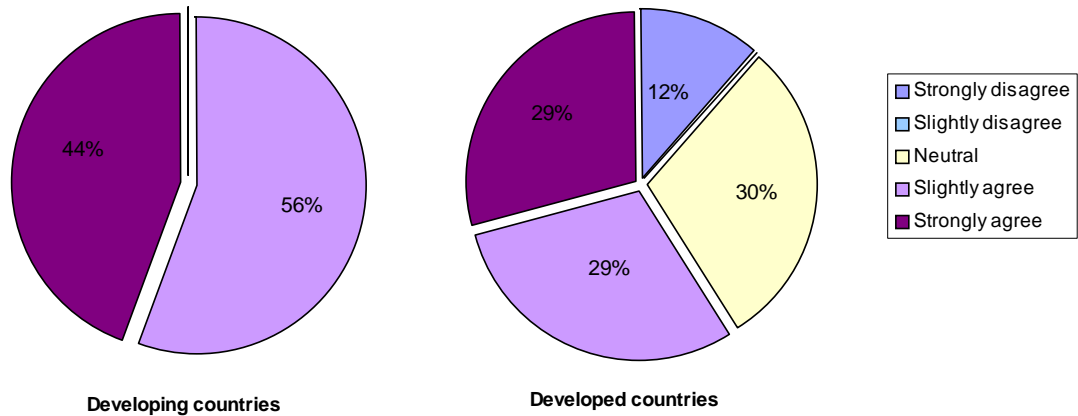


Figure 4-14 Responses to the statement: “It is becoming more common for organisations to combine or integrate ISO 14001 with systems for quality (e.g. ISO 9000) and health and safety (OHSAS 18001)”.

It was pointed out that the integration of management systems is more economically and administratively effective. Accordingly, there is “no reason to keep them separate”. Comments given to answers different from agreement considered the integration of management systems appropriate only for multinational and large companies.

4.3 Opinions about ISO 14001

This chapter present views on the development of ISO 14001, during its creation, the new version ISO 14001:2004 and the improvements still missing from the Standard.

4.3.1 Environmental stakeholders involvement during ISO 14001 development

Statement: During the creation of the ISO 14001 standard very few environmental stakeholders (i.e. NGOs, national governments, local and regional authorities, governmental and nongovernmental institutions, the public from around the globe) were involved. Consequently, in practise ISO 14001 does not cover the interest of all stakeholders; it is just for “some”.

This question was quite tricky; it is not therefore possible to give a straightforward percentage of agreement or disagreement with the statement. The respondents who answered “slightly agree” (31%) gave comments that in fact supported the idea that *“it is almost impossible to involve every single stakeholder covering everyone’s interests”*. Neutral answers (27%) declared that respondents had no opinion regarding this point. Furthermore, those who “strongly and slightly disagree” with the statement (35%) commented that during the creation of the ISO 14001 standard all stakeholders were indeed welcome. However, their participation was low due to different barriers, mostly economic.

4.3.2 Perceptions on and suggestions for improvements on the updated version ISO 14001:2004

Question: ISO 14001 was recently launched in an updated version (ISO 14001:2004). What do you think about that?

Answers for this question are presented in Table 4-3. Comments on this question suggested that although improvements were made compared with ISO 14001:1996 some clarifications are still missing.

Table 4-3 Perceptions of last version, ISO 14001:2004.

ISO 14001:2004 was:	Percentage
Very useful	12%
Useful	58%
Irrelevant	8%
Unnecessary	0%
Don't know	15%
No response	7%

Question: Let us assume that you would be responsible for the next update of ISO 14001, what would be your main suggestions for improvements?

Most of the respondents suggested improvements regarding environmental aspects issues either by giving further explanations or defining identification and assessment methodology.

Another concern was to focus more on the supply chain. Many answers addressed support/guidance on the certification process which is not a matter of the Standard.

4.3.3 Arguments to in favour and against promotion of ISO 14001

Question: Let us assume that you should promote ISO 14001 in your country. What would be your strongest arguments?

20 respondents (77%) gave their views on how they would promote ISO 14001 in their countries. Opinions on this issue were quite alike. To summarise, respondents would present ISO 14001 as a tool for good management, which, combined with environmental awareness, would improve organisations' environmental performance and legal compliance. Therefore, cost reductions would be increased. Furthermore, reaching international markets would become easier as a result of having satisfied their customers and giving a better image.

Question: Let us assume that you think that ISO 14001 should not be implemented in your country. What would be your strongest arguments against it and what would you suggest instead?

This question was answered by 73% - 19 respondents. Arguments for not promoting ISO 14001 in their countries were very different. The strongest arguments against ISO 14001 are that it is difficult to implement because it is difficult to understand. Thus, it is a resource (economic, human and time) consuming task that does not guarantee environmental performance improvements and legal compliance. Moreover, documentation makes it still more resource consuming. Finally, seeking for certification becomes even more expensive, not only due to certification costs but also as a result of maintenance costs.

With respect to suggestions given as alternatives to ISO 14001, these were more diverse in character. Respondents offered some of the following concrete suggestions:

- CSR reporting;
- Regulatory and enforcement system should be further strengthened;
- Dematerialisation. It is a new business strategy based on product-service systems which seek to change from separate production and consumption systems to one integrated system of products, services, infrastructure and networks. The aim is to minimise environmental impacts generated by consumption and to increase revenues (Boada & Mont, 2005, p.84);
- Performance based programs;
- Involvement of civil society to surveillance certification bodies; and
- Use of more business specific approaches, e.g. eco-labelling or other environmental management schemes.

4.4 Future of ISO 14001

This session aimed to get opinions about the future adoption and certification of ISO 14001.

4.4.1 Future implementation and certification of ISO 14001

Question: What do you think about the future of the ISO 14001 in your country?

Respondents were asked to choose among the following options depicted in Figure 4-15:

A = Implementation speed will increase and many more organisations will seek certification.

B = Implementation speed will slow down. Slow increase in number of certified organisations.

C = Status quo concerning the number of certified organisations.

D = Certified organisations will not renew their certificates. The number of certified organisations will decrease.

It is important to clarify that half of the respondents from developing countries who chose option “E” also chose option “A”. Hence, for statistic analysis those options were integrated into just one: option “A”. Thus, in the developing country pie, the green piece (67%) represents that “implementation speed will increase and many more organisations will seek certification” but that about half (33%) also considered that “alternative systems, that are less strict, will be launched (e.g. “ISO light”)”.

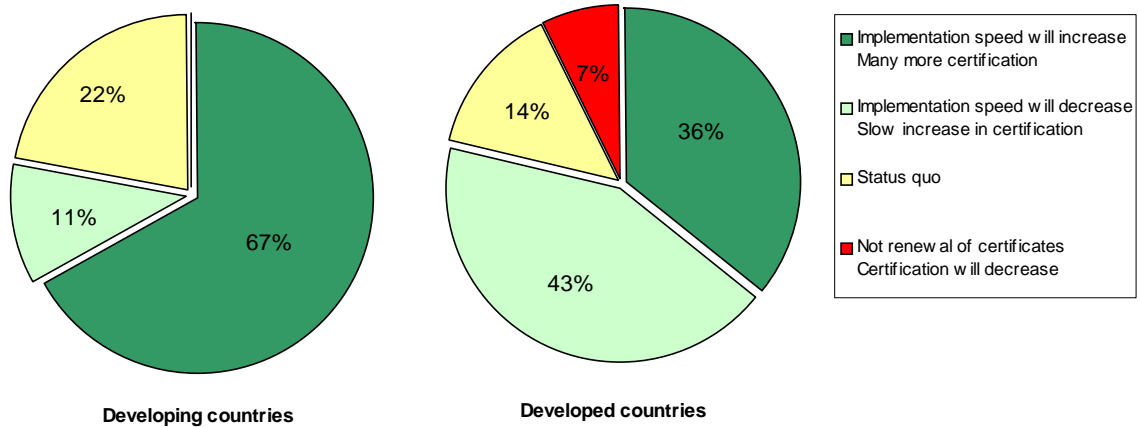


Figure 4-15 Future perspectives on implementation and certification of ISO 14001 in developing and developed countries.

Increase in both implementation and certification was supported more by developing countries than developed ones (67% and 36% respectively). A number of respondents from developed countries judged that implementation speed will decrease alongside a slow increase in the number of certified organisations (43%). On the other hand, only 11% of respondents from developing countries chose this option. Option D - “certified organisations will not renew their certificates. The number of certified organisations will decrease” - was only recognised by developed countries (7%).

Question: How will the implementation of ISO 14001 differ between developing and developed countries in the coming years?

Only 46% of the respondents answered this question.²⁹ Some respondents do not know what will happen, others considered there will not be much differences in implementation between these differing categories of economies. On the one hand, responses from developed countries referred to an increase in implementation in developing countries. An opposite view, though, predicted lagging implementation in developing countries in

²⁹ From developing countries 5 out of 9 respondents gave their views and from developed countries 7 out of 17 commented on this issue. The perspectives of respondents from developed countries were very different.

comparison with developed countries. On the other hand, the developing countries' respondents were more positive about the increasing implementation of ISO 14001 in their countries. However, there was also some scepticism in the answers.

4.4.2 Future work expectations of ISO 14001

Question: Will you work with ISO 14001 in the coming years?

In developing countries, no respondent considered either that they will work with ISO 14001 more than before or that they will not work with ISO 14001 at all (see Figure 4-16). For the options referring to continue working with ISO 14001 at the same relatively high or low level, the same percentage was given (25%) to each one. On the other hand, responses from developed countries were more distributed among the options, and one person out of 17 affirmed not to work with ISO 14001 in the future.

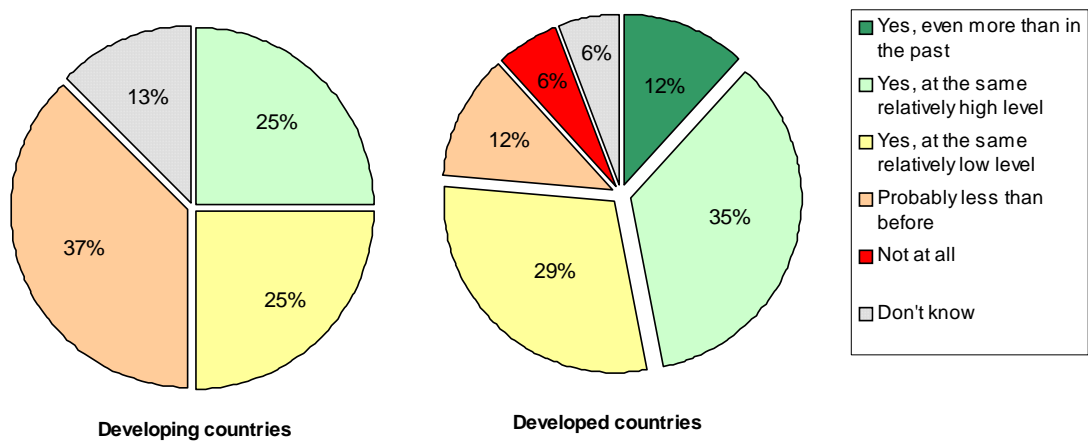


Figure 4-16 Respondents' future own work expectations with ISO 14001- developing and developed countries.

4.5 Summary of findings

4.5.1 Benefits from ISO 14001 implementation

Respondents ranked some common benefits from implementation of ISO 14001 as follows:

- Creates confidence among stakeholders and improves green image giving competitive advantage;
- Ensures legal compliance;
- Brings commercial benefits;
- Satisfies customers;
- Lessens environmental impacts;
- Cost reductions; and
- Benefits from the government.

Additionally, it was agreed that irrespective of the country many organisations are satisfied with the implementation of ISO 14001 and claim that they have improved environmental performance and saved resources and money.

4.5.2 Problems with ISO 14001 implementation

Respondents prioritised the problems related with ISO 14001 implementation. Table 4-4 presents the major problems related with ISO 14001 implementation globally and some specific problems for developing countries.

Table 4-4 Comparison between problems of ISO 14001 globally and in developing countries.

Globally	Developing countries*
The system does not guarantee any improvement in environmental performance	Lack of enforcement of environmental legislation
Demanding documentation	
Implementation and maintenance of the system costs	Cost of implementation
Unclear guidance and difficult to understand the different requirements	
Internal and external auditors are not competent enough	Demanding documentation
Possibility of “hiding” environmental improvements in order for a company to be in compliance with the requirement of continual improvement	
Corruption could bias the certification process	Lack of method/criteria to assess environmental aspects significance
ISO 14001 does not require to go beyond legal requirements	

* The specified problems for developing countries were prioritised by all respondents (i.e. from developed and developing countries).

4.5.3 Future of ISO 14001

Implementers were asked for their own future involvement in the Standard’s implementation, and for their views on the future implementation and certification of ISO 14001. Regarding the former question, respondents from developing countries (76%) were more interested in continuing working with ISO 14001 than respondents from developed countries (50%). With respect to the latter, respondents from developed countries were more negative about the pace of the increase of ISO 14001 implementation and the issuance of more certificates. Respondents from developing countries were positive on the future growth of implementation and certification of ISO 14001.

5 Experiences of the ongoing implementation and certification of ISO 14001 – Interviews with *certifiers*

Interviews with persons working for accredited certification bodies and persons highly involved in the ISO 14001 certification process were conducted to recognise some views on ISO 14001 from the certifiers' perspective.

The interviews addressed specific issues around the certification process such as credibility, driving forces and the importance of and problems with certification - asking for differences between developing and developed countries. The Standard itself was also discussed, e.g. expectations on and opinions on the new version ISO 14001:2004 and any missed issues, as well as its implementation. Finally, it sought to obtain certifiers' views on the future of ISO 14001 implementation and certification, touching also upon the integration of management standards.

It was possible to conduct 6 interviews out of the 12 people contacted. Interviewees were from France, India, Sweden, Switzerland, USA and Zimbabwe. The interview format is presented in Appendix V.

5.1 ISO 14001 certification process

5.1.1 Driving forces for certification

Interviewees mentioned few driving forces. They did not provide any differentiation between developing and developed countries. It was declared that certification is essentially market driven. Other drivers are to acquire more recognition, and requirement from the mother company.

5.1.2 Differences when certifying in developed and developing countries

It was pointed out that there is no difference in the certification process between developing and developed countries. *"The task is the same no matter where the organisation is in the world, the size, or the type of business"*.

Differences were recognised, however, concerning the level and coherence of the regulation system of a country, for example:

- In developing countries regulation tends to be weak, *"some countries do not have environmental regulation, some others have conflicting regulation"*.
- In developed countries regulation is more consistent, compatible and generally stricter. Also there is better guidance.

Then *"the level of environmental threat accepted in a country varies according to its regulation"*; a factor that also strongly influences the environmental awareness, stakeholder's strength and the country's environmental problems. Therefore, assessment of the significance of environmental aspects is not only based on the nature of an organisation's activities but also on legal requirements.

Furthermore, *“for developed countries, in many cases certification is not a high priority because strict regulations exist”*. Hence, there are some examples of companies preferring to spend the money on R&D and marketing rather than on certification: for example, General Motors, Ford and Siemens. Nevertheless, *“this is also a matter of recognition”* with only popular companies being able to do this. Another significant difference corresponds to the maturity of auditors. *“In developing countries there is not much maturity”*, with the lack of know-how on behalf of local auditors making it difficult for the organisation to conduct a valuable internal audit.

5.1.3 Importance of ISO 14001 certification

Interviewees reported that a certified organisation would perceive many benefits internally and externally, irrespective of its activity, location and size. The following list is a compilation of the comments and explicit benefits obtained during the interviews:

- Confidence to the market and competitive advantage;
- Process efficiency bringing cost reductions;
- The organisation become better, meaning its quality also improves;
- Satisfy consumer requirements;
- Employees' awareness increasing;
- Environmental protection beyond mere compliance with legal requirements;
- Better cooperation with other agencies and authorities; and
- Risk prevention.

5.1.4 Problems related to certification

It was experienced that at the beginning organisations from developing countries, whom were not even familiar with EMS, found it difficult to adopt the Standard. Thus, *“they were afraid of certification and did not understand the benefits it generates”*. The most widely reported problem by interviewees was resources. Resources not only entail the economic costs of implementation and maintenance, but also the experts and personnel that both of these tasks demand after obtaining the certificate.

Interviewees revealed examples of problems they faced when conducting the certification audit, as follows:

- It has some intangible parts as internal communication, *“it is impossible to audit”*.
- There are difficulties in finding indicators to follow-up continuous improvements. *“Organisations are not always aware that they have made a lot of continuous improvements”*. *“It is necessary to identify a sustainable indicator that could ensure its usage even if the company faces major changes”*.

Surprisingly, one interviewee mentioned that *“for companies in general, it is not very clear that they are supposed to measure and follow-up every significant aspect”*, with examples being given from companies from the US, Germany and The Netherlands. It was also stated that no convincing explanations were given for this misunderstanding, revealing the lack of awareness in these companies.

When it comes to management systems integration, problems arise due to the lack of integration of environmental aspects in every single part of the organisation's processes. The reason behind this is to have integrated systems, which are based on one management standard, generally the ISO 9001. Therefore, there is a tendency to be focused on the use of the standard as a baseline.

5.1.5 Credibility of certification process

Since *“there is always a concern to make certification more credible”* the fact that unaccredited certification bodies are increasing is becoming a cause for concern. Nevertheless, as market surveillance exists, currently there is not much being done as to how to make credibility of the certification process more reliable. In addition, the need for an accreditation control mechanism was also suggested. *“It could be a joint approach between accreditation stakeholders, i.e. accreditation bodies, certification agencies, NGOs, regulators”*. It was also stressed by an interviewee that *“the ISO standard – the document, has its own copy right. The certificate has only a label, it is not protected label”*.

5.2 The Standard

5.2.1 Expectations on the ISO 14001 publication

Interviewees were more positive as to the fulfilment of their expectations than negative. They claimed that it has fulfilled their expectations on continual improvements, decreasing environmental impacts in most of the cases, as well as increasing environmental sensitiveness. As a result, the majority of organisations are in compliance with the requirements and some of them *“have worked harder on environmental issues beyond requirements”*. It was also noticed *“that ISO 14001 helps industries and organisations to make a step forward in the enterprise quality and environmental protection as part of sustainability”*. The author deduces that this step forward has been caused by changes to the environmental approach taken by organisations: from end-of-pipe actions to pollution prevention planning.

On the other hand, one interviewee was expecting more significant continual improvements. This unfulfilled expectation was linked to the general focus of the ISO 14001 standard: *“what should be improved the system or performance?”* Some further negative examples are quoted as follows:

- *“I was expecting much more and better acceptance, it has been a slow process”*.
- In Zimbabwe³⁰ *“awareness has been increasing, but lack of resources do not let companies implement EMS to ensure environmental protection”*. In addition, *“not many (or not any) SMEs are certified, not even implementing EMS - if I happen to certify any SME I will make a press release”*.

5.2.2 Views on the versions of ISO 14001 standard

Some interviewees stressed the positive consequences of the Standard, remarking that ISO 14001 is a tool for improvement that provides a framework to deal with environmental issues by applying better practices. *“Previously, everyone talked about environmental protection, aspects, impacts, and so on, but the standard provided the basis to work on that”*.

³⁰ Considered as a developing country.

Moreover, it was recognised that ISO 14001:2004 has improved by *“taking into account supply chain responsibilities”*. The author links this statement with the improvement made to the wording of the Standard: i.e. altering the word “employees” to “persons working for or on behalf of the organisation” (refer to Chapter 2.2.4).

The following aspects were addressed as missing issues from ISO 14001:2004:

- It is missing a driver for environmental performance, *“financial incentives are always effective, e.g. corporate insurance, better for those having a fully recognised system”*. Furthermore, more connection with other ISO 14000 series standards should be in place.
- Although the new version is more aligned with ISO 9001 (see Chapter 3.3.1), there was considered a lack of connection between the standards when it comes to process orientation.³¹ *“Because it is very important for organisations to identify environmental aspects in every process on their business, ISO 14001 still lacks a comprehensive guide as to how to integrate environmental aspects in an organisation’s processes”*.
- *“There is needed a common revision of ISO 14001 and ISO 9001 regarding process integration”*.

Another interviewee suggested the issue of transition between ISO 14001:1996 and ISO 14001:2004, which expired four months ago (May 15, 2006). *“The transition might have been successful because companies were sure that they also fulfilled ISO 14001:2004 because it implied minor changes in the environmental management. Therefore it was easy to make the transition”*.

5.2.3 Over documentation

Interviewees defended the current practise of ISO 14001 against bureaucracy. They recalled that ISO 14001 *“does not require that everything must be documented and recorded”*. The following are statements revealed by interviewees in order to show opposition to referring to ISO 14001 as a bureaucratic system:

- *“ISO 14001 is not bureaucratic, it has learnt from the ISO 9000 experience. It has benefited from 9000’s mistakes”*.
- *“If ISO 14001 is applied in the right way there is not much documentation. There is no need to document everything only the further procedures”*.
- *“Over documentation drastically decreases as a result of integration with other management standards”*.

Nevertheless, it was recognised that there are some minor cases of overdocumentation, especially when inexperienced implementers adopt an EMS for the first time, *“although they gain experience in making clear and concise documentation”*. This mostly happens among SMEs and developing countries because *“although writing down things helps to clarify, one should be selective on what to write”*.

³¹ The improved version of ISO 9001:2000 was focused on process orientation.

5.3 ISO 14001 implementation

5.3.1 Reasons behind success or failure of ISO 14001

Interviewees suggested some factors influencing the uptake of ISO 14001:

- A country's regulatory system: *"If the country has serious punishments for violating environmental legislation, e.g. there are high fines, or even prison, companies do not tend to opt for voluntary agreements". Whereas "if the country has soft sanctions, there is a greater uptake of ISO 14001 among companies".*
- Support from government and other institutions: when resources are scarce, organisations have problems implementing ISO 14001. To deal with this *"there exists many initiatives for support, such as industry associations supporting implementation, government subsidies, special mechanisms e.g. ISO/DEVCO³²".*
- Awareness of the market and benefits from ISO 14001 implementation: *"this is a key for SMEs adoption".*
- Sector activities: *"Manufacturing companies and high risk activities companies see the need for adopting ISO 14001, rather than service companies".*

5.3.2 Active business certifying with ISO 14001

Question: Apart from multinational companies what other kinds of businesses are adopting ISO more actively?

It was agreed that the industrial sector has always been leading the implementation and certification of ISO 14001, *"the same as for ISO 9001"*. In developing countries *"large and multinational companies are seeking certification rather than local and small ones"*. Interviewees pointed towards an increase of ISO 14001 uptake among the health sector, public sector, financial sector, tourism sector and the supply chain.

Other more specific examples for this question were provided in two interviews:

- *"Implementation in new sectors such as the agrofood industry, more linked with the trend of organic farming and GMOs".*
- *"During the last 1-2 years in Sweden, small companies (10-25 employees) are entering".*

5.3.3 Role of governments in ISO 14001 promotion

All interviewees identified the central role of governments in promoting ISO 14001 adoption. The first issue is the provision of environmental education to increase the level of community awareness. The second role is to provide comprehensive and coherent regulation. It was recalled more than twice that governments can promote implementation and certification but not imposition: *"promote: yes, impose: no!"*

Interviewees also reported examples of promoting activities and incentives:

- *"Governments are assessing best practices and giving environmental orientation".*
- *"Governments are providing subsidies to cover implementation or certification expenses".*

³² Information on ISO/DEVCO is provided in footnote # 24.

- *“In India the license to operate is given for 1 year, but if the company is ISO 14001 certified the license is extended to 2 years”.*

5.4 Future visions of ISO 14001

5.4.1 Future role of ISO 14001

Interviewees recognised the integration of ISO 14001 into day-to-day activities concerning management, financial, quality, performance, social responsibility, risk assessment, legal compliance, among other dimensions of an organisation.

Other ideas on the future of ISO 14001 were given as follows:

- *“Next revisions will adapt ISO 14001 to new stakeholders’ views of sustainability”.*
- *“There will no longer be a lack of understanding of the Standard”.*
- *“Benefits from implementation and certification will be well known worldwide”.*
- *“ISO 14001 will be applied together with other tools such as other 14000 series, CSR and sustainability reporting and so on”.*

5.4.2 Future way to address environmental issues in organisations

Question: What is your view of the future organisation of environmental issues in a company? What will be the role of the environmental manager?

It was thought that environmental issues would be related to risk aspects of all parts of organisations’ concern (financial, operational, environmental, social, etc). Therefore, *“a holistic management will be needed, requiring a multitask knowledge, risk manager”.* With respect to sustainability issues, *“managers will also be more focused on sustainability communication through reporting, meeting expectations from stakeholders on higher performance improvements”.*

5.4.3 Future of ISO 14001 certification

There was consensus on the continual growth of certification as a market requirement, using words such as *“definitely”, “clearly” and “undoubtedly”.* Interviews related the increase of ISO 14001 certification to its reliability. *“Organisations will need to prove their environmental compliance and good performance”.* Furthermore, globalisation as a major cause of competitiveness is making *“organisations equally responsible also on sustainability”.* Finally, another equally interesting statement was: *“Organisations certified for many years will not renovate the certificate because they know how to perform”.* The author suggests that those organisations have already gained the confidence of stakeholders.

5.4.4 ISO 14001 integration with other management system standards

All certifiers agreed on the importance of integration - *“integration is very good”* - and that as a trend this is increasing, *“more companies are integrating, it is more cost effective”.* One concern mentioned by various interviewees was related to the fact that the integration of the management systems is based on one standard. Hence, it is essential to give the same

importance to each system (i.e. quality, environment, health and safety), “*giving them the same weight and integrating every single issue in every single level and process of the company*”.

5.5 Summary of findings

5.5.1 Benefits from ISO 14001 certification

The author prioritises the benefits from certification identified by **certifiers** according to the repetition and the emphasis given from the respondents:

- Confidence to the market and competitive advantage;
- Better cooperation with other agencies and authorities;
- Employees’ awareness increasing;
- Risk prevention;
- Satisfy consumer requirements;
- Process efficiency bringing cost reductions;
- The organisation become better, meaning its quality also improves; and
- Environmental protection beyond mere compliance with legal requirements.

5.5.2 Problems with ISO 14001 certification

The problems revealed by interviewees are compiled from and prioritised following the same criteria as in benefits (above).

- Economic resources to implement and then be certified, entailing also human resources (need for experts);
- The level and coherence of the regulation system of a country varies across the world, influencing not only the uptake of ISO 14001 but also the assessment of the significance of environmental aspects. The author deduces that the stringency of the regulation system is inversely proportional to the enthusiasm to seek certification, but directly proportional to the rigour of identification and assessment of significant aspects. Thus, developing countries are more enthusiastic to obtain the certificate than developed countries, and on the other hand, developed countries are more rigorous in the assessment of significant aspects;
- Competence of internal and external auditors. In developing countries the lack of know-how affects the value of organisation’s internal audits;
- Lack of experience with EMS means organisations found the implementation of ISO 14001 difficult, and were thus afraid of certification. Inexperience also leads to over documentation, however these were minor cases;
- There are some Standard requirements that are intangible and others difficult to follow-up. For example, internal communication was claimed to be “*impossible to audit*”, and the choosing of “*sustainable indicators*” to follow-up continual improvements was also suggested to be hard; and
- Credibility of certification. Unaccredited certification bodies are increasing.

5.5.3 Future of ISO 14001

The future of ISO 14001 refers to the future implementation of the Standard, its certification, its integration with ISO 9001 and OHSAS 18001 and the future addressing of environmental issues in organisations.

Implementation

Certifiers believe the future will see the integration of ISO 14001 with all the other issues involved in an organisation's daily activities, because in the future organisations will focus more on sustainability. All parts of organisations' concerns will be considered risk aspects: i.e. management, finances, quality, environmental performance, social responsibility, procedures, legal compliance, operations, etc.

- *“There will no longer be a lack of understanding of the Standard”*
- *“Benefits from implementation and certification will be well known worldwide”*

Certification

Interviewees considered that *“definitely, clearly, undoubtedly”* certification will continue to grow as a market requirement. The pace of its increase will be proportional to certification bodies' reliability. In addition, *“organisations certified for many years will not renovate the certificate because they know how to perform”*.

ISO 14001 integration with other management systems

Certifiers pointed out the importance of integration; they related the increased integration of management systems among organisations to the cost effectiveness of this practice.

6 Discussion and analysis

In order to answer the research questions stated in Chapter 1.2, this chapter compares and/or contrasts the findings of this thesis with those given in literature, *the case studies*³³ and other studies.

This chapter discusses mostly the perspectives of the three main actors of ISO 14001, i.e. **developers** (Chapter 3), **implementers** (Chapter 4) and **certifiers** (Chapter 3.4). Their perspectives are in fact the findings of this thesis, obtained through a questionnaire (**implementers**) and interviews (**developers** and **certifiers**).³⁴

6.1 ISO 14001 expectations generated

Generally, when something is created the expectations for its development arise automatically; the ISO 14001 standard publication was no exception to this rule.

Different expectations among actors involved in ISO 14001 were identified. On this basis, **developers** expected to introduce a standard on EMS, **implementers** expected to improve an organisation's environmental performance that would then bring other benefits and **certifiers** expected improvements of an organisations' environmental performance from ISO 14001's implementation, as well as to certify more organisations. Thus, **implementers** and **certifiers** were expecting more business opportunities, i.e. the Standard would potentially create jobs for both of them. Finally, the **international community** expected the involvement of all stakeholders during this process.

Since a voluntary international environmental standard system was requested by the Business Council for Sustainable Development, it could be thought that ISO 14001 was created to contribute to sustainable development. However, the aim of the **developers** of the Standard – ISO/TC 207 was not explicitly to contribute to sustainable development but to disseminate a standard on EMS to be implemented in any kind of organisation around the world, that could deal with their environmental performance. In this sense, the **developers'** expectation was fulfilled as today many organisations are implementing EMS worldwide.

On the other hand, after ISO 14001 was launched **developers** noticed that **implementers** were focusing on developing and improving the system rather than on an organisation's environmental performance improvements. The author suggests that this was caused by misinterpretations of the Standard. Although this issue was addressed during the revision of the first version – ISO 14001:1996 and some improvements were made, **developers** and **certifiers** believe that the reviewed version – ISO 14001:2004 is still more system oriented than performance oriented.

Finally, the **international community** claims that not many environmental stakeholders were involved in the negotiations of the creation of the ISO 14001 standard, criticising the Standard as it only considered the interests of "some" (i.e. ISO members). More specifically,

³³ When referring to "*the case studies*" are the studies and surveys presented in Chapter 2.4.

³⁴ Remember that when the three main actors in ISO 14001 are written in bold (i.e. **developers**, **implementers** and **certifiers**) refers to the persons contacted during this research. Otherwise, it is referred to an actor in general.

Krut & Gleckman (1998) stressed “*the involvement of other interested parties has been negligible or extremely limited*” (p.3). However, these authors also mention that the decision to develop the Standard was made by NSBs, industrial trade associations, private sector firms, consulting firms, governments, NGOs, international organisations and universities (Krut & Gleckman, 1998, p.50). In contrast, according to the **implementers**, the negotiation process was open to all and any stakeholders were thus welcome to participate. As it was pointed out by one respondent: “*it is almost impossible to involve every single stakeholder covering everyone’s interests*”. The author links the opposite views of Krut & Gleckman (1998) and **implementers** as although the negotiation process was open to the public, it was not easily accessible since the development of a standard is an economic, human and time consuming process.

In addition, the **international community** had also questioned the participation of developing countries during the drafting of the Standard. In response to this, **developers** accepted that developing countries were underrepresented due to economical constraints and lack of expert representatives, but that this was not as a consequence of them not being invited. Furthermore, the ISO organisation has a special mechanism – ISO/DEVCO³⁵ to support the participation of developing countries through funding and capacity building. On top of that, **developers** linked the lack of participation of developing countries and its industry representatives with the inefficiency of the promotion of the ISO 14001 standard.

The author believes that the above aspects, the expectations not fulfilled, plus deficient resources (economic and human, e.g. lack of promoters to persuade the industry and other businesses, as well as people for education and training across the implementing country) influenced the understanding of the Standard. For the understanding of the ISO 14001 standard, the author recognises not only the comprehension of the document itself, but also the grasping of why ISO 14001 is available on the market, the awareness of what the benefits of implementation are to overcome difficulties during the process, and the realising of how to implement ISO 14001 in an organisation in a simple but effective way.

6.2 Benefits from ISO 14001

There are several perceived benefits of ISO 14001, not only from implementation and certification but also from the Standard per se. Overall, the benefits are similar but naturally they vary depending on which perspective they are viewed from. Thus, **developers** emphasised the great impact of ISO 14001, **implementers** prioritised the benefits from implementation and **certifiers** commented on the benefits gained from ISO 14001 certification.

When it comes to benefits from ISO 14001 implementation and certification, their importance differs among organisations and countries. Therefore, Table 6-1 presents the major benefits from ISO 14001 reported by implementers in different *case studies*. The *case studies* were selected to compare some dimensions that cause the divergence of benefits. For example, the questionnaire presents mostly views from environmental consultants; the ISO survey provides experiences of SMEs globally; Malmberg reviews companies from a developing country; and Raines surveys certification.

³⁵ See footnote # 24.

Table 6-1 Identified benefits from implementation of ISO 14001 by implementers in different studies.

IIIEE Alumni Questionnaire (2006)	ISO/TC 207/SC1 Strategic group (2005)	Åsa Malmberg (2003)	Susan Raines (2002)
Confidence among stakeholders	Environmental compliance	Improvements of environmental impacts	Savings from environmental improvements
Green image giving competitive advantage	Customer requirements	Green image	Environmental awareness among personnel
Legal compliance	Employee commitment	Cost reductions	International trade
Commercial benefits	Better management of a specific environmental issue	Safer environment for the employee	Better relationship with regulators

The author suggests that the above benefits (from Table 6-1) result in competitive advantage and have an economic impact on the organisation. Nevertheless, authors and **implementers** are also aware of the cost of implementation and certification. Taking into account **developers'** and **certifiers'** perspectives, they also identified improvements of environmental performance when implementing ISO 14001, as well as better cooperation with authorities and stakeholders.

It is also important to mention that the motivations for ISO 14001 implementation are related to the benefits gained. This is depicted in Figure 6-1 from which can be seen for example: the desire to meet legal and customer requirements, and requirements from the mother company and financial institutions, as well as to improve image and competitiveness; generates costs savings; risk prevention; and efficiency owing to improvements of environmental performance. Hence, environmental legislation is complied with, cooperation with institutions and authorities is improved, and confidence is created among stakeholders. Thus, obtaining a better image and satisfying customers.

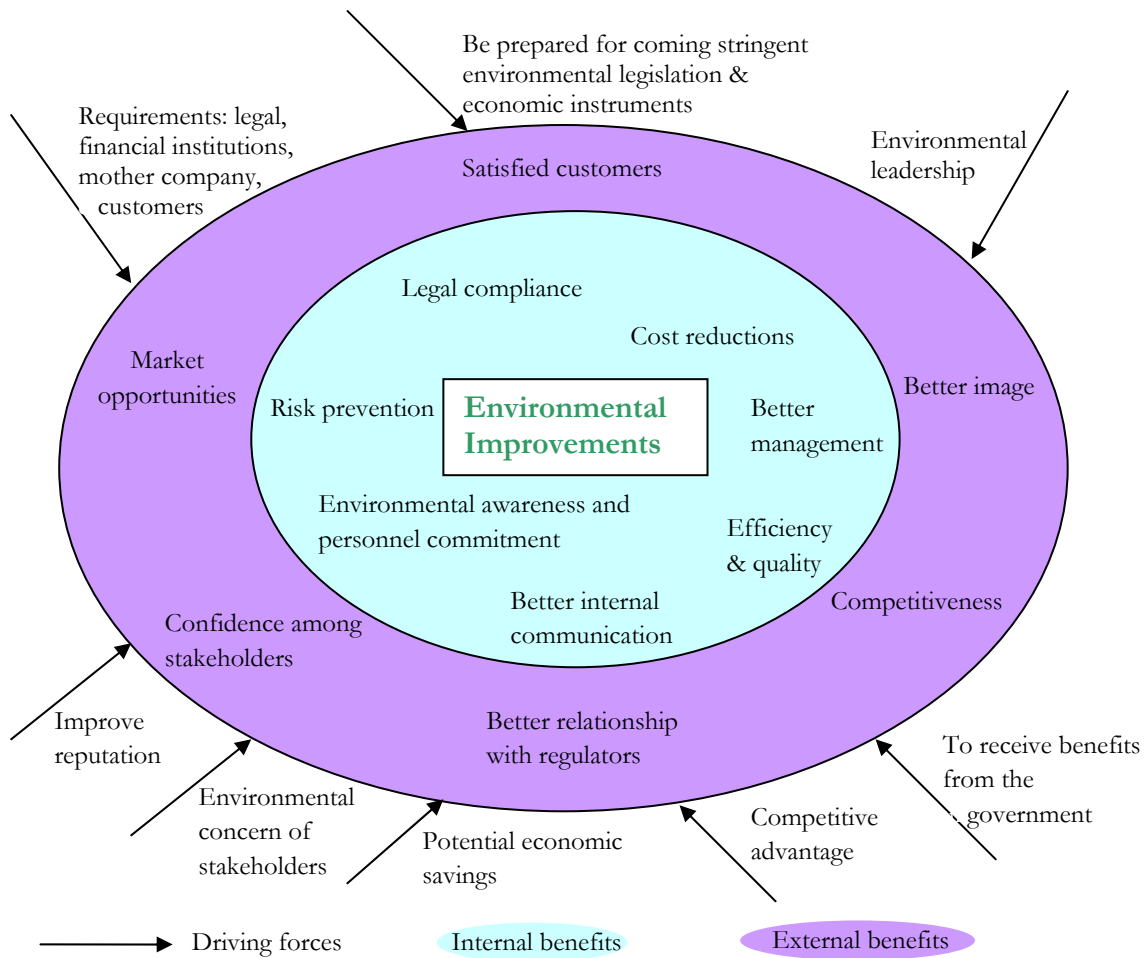


Figure 6-1 Relationship between driving forces for and benefits from ISO 14001 implementation in an organisation.

According to the experiences reviewed and the interviews conducted, it can be said that organisations from developing countries might have experienced or could have reported more benefits than developed countries. The author refers to some benefits giving possible reasons behind that differentiation, as follows:

Firstly, the organisations' desire to obtain the ISO 14001 certificate in developing countries could introduce an EMS for the first time. Therefore, benefits from ISO 14001 implementation, such as working on environmental performance in a systematic and structured way, are more perceptible.

Secondly, it is known that in developed countries there is more environmental awareness than in developing ones. Subsequently, the implementation of ISO 14001 could enhance environmental awareness and personnel commitment in organisations from developing countries to a greater extent than in developed countries.

Thirdly, environmental regulation in developing countries tends to be weaker than the regulation in developed countries. Organisations implementing ISO 14001 in developing countries might be recognised as taking proactive approaches to handle their environmental impacts, thus improving relationships with regulators and financial institutions. For instance, authorities could conduct fewer inspections or could apply regulatory relief. With respect to

financial institutions, there could be a reduction in interests (banks) and fees (insurance companies). In both cases it also results in cost savings.

However, shortly after ISO 14001:1996 was launched it was easier for developed countries to implement the Standard not only as a result of having EMS in place but also due to the fact that some countries had already a national EMS standard, i.e. UK, France, Spain, Ireland and South Africa.³⁶

6.3 Problems of ISO 14001

There are also many barriers, problems and challenges related to ISO 14001 implementation that affect certification, as a consequence of the Standard's deficiencies. **Developers, implementers** and **certifiers** identified these problems focusing on their own area of competence. Although these fields of competence are presented separately to show the problems related to each one (i.e. the Standard, implementation and certification), it is important to bear in mind the link between them.

The standard

To start with, and unsurprisingly, the Standard is criticised by many stakeholders. The theoretical literature (Krut & Gleckman, 1998, p.34; and Sunderland, 1997, p.130) judged that ISO 14001 implementation does not guarantee improvements in organisations' environmental performance and it is system oriented rather than performance oriented. The latter criticism was also commented upon by **developers** and **certifiers**. In contrast, *the case studies* and this project reported that environmental performance improvements are one of the major benefits from ISO 14001 implementation.

According to the above, the placing of greater focus on performance, achieving environmental improvements is crucially dependent on the commitment of the top manager and the understanding of the Standard. Thus, demonstrating that a piece of paper (a list of requirements), cannot guarantee anything for organisations without a proper implementation of the requirements that would contribute to organisations' environmental performance.

Another problem with the Standard is the understanding of some requirements. The identification and assessment of environmental aspects has been one of the most difficult requirements of ISO 14001 experienced by **implementers** in developing and developed countries, and large organisations and SMEs alike. Similarly, this was reported by *the case studies* and recognised by **developers** and **certifiers**. In particular, ISO/TC 207/SC1/Strategic SME group (2005) has revealed the most difficult requirements of ISO 14001, identifying the first requirement as the toughest. Moreover, a study on the evaluation of environmental aspects' significance in ISO 14001 implementing companies in Estonia found that these companies had faced considerable difficulties when assessing their environmental aspects (Pöder, 2006, p.742).

On top of that, organisations have found the wording of the ISO 14001 standard to be difficult. Both tough requirements and difficult language have led to the seeking of assistance to implement ISO 14001, declared **developers** and **certifiers**. Implementers have tended to get assistance from consultants rather than handbooks and guidance (ISO/TC 207/SC1/Strategic SME group, 2005, p.38). Therefore, hiring a consultant constitute an

³⁶ Not considered as developed country yet it had an EMS standard.

extra cost when implementing ISO 14001. However, only 10% - 20% of the total cost of implementation comprises training, consulting, and certifications fees (external costs), based on the experienced with ISO 9000 standards (Jackson, 1996, p.231).

Implementation of ISO 14001

As anticipated in theory and other studies, the implementation costs of the ISO 14001 are high and naturally **implementers** are very concerned about this. The questionnaire showed 25% more responses from developing countries than from developed countries supporting this fact. This is aligned with Malmborg's findings that recognise implementation cost as the major problem for the Uruguayan³⁷ companies studied.

In addition, an extra comment was provided in the questionnaire suggesting that implementation costs are directly proportional to the correct application of the standard company specific. The author interprets this as meaning that the use of guidelines and handbooks or assistance of environmental consultants during implementation of ISO 14001 is successful only when an organisation's activities are well known. This leads to the design of a proper system that fits into the organisation, making the implementation process easier. The problem is that on many occasions formats from previous implementation in other organisations are used, and when this is followed line by line it becomes complicated simply because organisations' performance, size, activities, composition, needs and so on are not identical.

Regarding documentation, the findings demonstrated, especially from **developers** and **certifiers**, that over documentation is caused by misunderstanding of the Standard and the inexperience of the implementer. From the **implementers'** point of view, surprisingly, the questionnaire presented 10% more respondents from developed countries than from developing countries that considered the implementation of ISO 14001 increases the amount of paper work. Similarly, Malmborg (2003, p.42) mentioned that the problem in the companies studied was not over documentation, it was mostly lack of employee motivation to document. On the contrary, the literature indicates the risk that organisations are more focused on documentation, allocating more human and time resources for this, rather than developing and improving environmental objectives and environmental performance. However, in ISO/TC 207/SC1/Strategic SME group (2005, p.39) and other studies (Pedersen & Nielsen, 2000, p.35) it is stressed that experience gained during implementation of ISO 14001 reduces the over documentation. This was also supported by **developers** and **certifiers**.

ISO 14001 certification

The major problems related to certification are costs, conducting internal and external audits and the credibility of the certification process.

Firstly, an important trend pointed out in ISO/TC 207/SC1/Strategic SME group (2005) is that the users of the standard consider the cost of certification more problematic than the cost of implementation. This is also the concern of *other studies* and **implementers**. In fact, certification constitutes only 5% - 10% of the overall cost of an EMS implementation (Jackson, 1996, p.230). Thus, it is demonstrated that ISO 14001 is seen by many people as being only a certification system. Or, it is not acknowledged that certification is a market requirement rather than an ISO 14001 standard requirement. Therefore, the author

³⁷ It is important to remind the reader that Uruguay is classified as developing country.

considers it as a barrier for developing countries and SMEs to implement ISO 14001, not only as a result of that misunderstanding but also owing to the lack of acquaintance with both self-declaration and with second-party recognition.

Secondly, since the certification process is based on audits the competence of internal and external auditors is crucial. **Certifiers** gave greater significance to the role of external auditors as they provide an independent evaluation and make recommendations to the organisation. Hence, they could guide and advice the organisation *“to use effectively the EMS, with good communication skills”*. Furthermore, **certifiers** declared the lack of know-how of internal auditors in developing countries. **Developers** argued for the role of internal and external auditors in the focus on performance improvements rather than on the system. And **implementers** ranked the problem stated as “internal and external auditors are not competent enough” as 5th out of 8.

All the above demonstrates that a well conducted audit can add value to organisations’ EMS, can facilitate the certification process, and can ensure the continual improvements requirement. Moreover, an interviewee declared that some SMEs are cooperating with universities to let students conduct internal audits in their organisations. In the author’s opinion, such initiatives provide a win-win situation for students involved in this process and for the company per se.

Thirdly, **developers** and **certifiers** are very concerned about the credibility of certification due to the increase of unaccredited certification bodies. It was declared by a **developer** that it is currently suggested that 60% of the certification bodies are unaccredited. This information could not be corroborated, so it cannot be taken for granted. However, it can be speculated that there would be considerably more certificates than those presented by the ISO annual survey on worldwide certifications. This is due to the fact that the ISO survey only uses data from accredited certification agencies and from accreditation bodies that are members of the International Accreditation Forum.

On the other hand, **developers** related this credibility problem to the nature of this activity: *“certification is a commercial activity, it is a business”* and hence competitiveness plays an important role. Nevertheless, 54% of **implementers** judged the credibility of ISO 14001 as “high”, with 44% judging it to be “medium”. More specifically, 25% more **implementers** from developed countries than from developing ones considered the high credibility of ISO 14001, whereas the medium credibility was similar in both categories.

The author compares the competitiveness of certification bodies from the positive or the negative effect it can have on the certification process. On the one hand, in order to have a competitive advantage demonstrating reliability a certification body might seek to be accredited. On the other hand, an unaccredited certification body could offer cheaper prices and more organisations could therefore afford it. Hence, organisations pursuing the certificate and the market are the main drivers for certification bodies to be accredited, as there is market surveillance for the credibility of certification.

Finally, the problems presented during the phases of ISO 14001 (i.e. the Standard, implementation and certification) identified from each of the main actors are almost the same, but had raised the concern of stakeholders who claimed that the Standard is a bureaucratic system. First of all, Collins Cobuild dictionary (2003) defines bureaucratic as *“involving complicated rules and procedures which can cause long delays”*. According to this definition, the opinion of the author is that the problems identified by **developers**, **implementers** and

certifiers do not on the whole rest upon the idea of the bureaucracy of ISO 14001, except for over documentation. With respect to the identification and assessment of environmental aspects, the author believes that such analysis and evaluation is not essentially beyond the common practice of environmental science. Although the need for an expert (hiring consultants or involving students) to carry out such work is not denied, this does not exclude the possibility of obtaining such skills through the educating and training of employees. The author perceives the consequence of all this as positive, even though it stemmed from the negative perception of bureaucracy. Therefore, the fact that the complexity of ISO 14001 implementation entails *so* many processes is justified by job creations and the boosting of academia to carry out research.

6.4 Future development of ISO 14001

The future development of ISO 14001 is divided into **developers'**, **implementers'** and **certifiers'** views on the future implementation of the Standard, ISO 14001 certification and the integration of ISO 14001 with other management standards, such as ISO 9001 and OHSAS 18001.

Implementation of ISO 14001

According to **implementers'** responses, many organisations are satisfied with the implementation of the Standard and there is a desire to continue working with ISO 14001.³⁸ In both cases developing countries are more enthusiastic. This enthusiasm can be related to trends on certification which have been increasing by at least triple in almost all the cases for developing countries, since 2001 (see Figure 2-7). The author considers that organisations in developing countries are noticing the benefits gained by implementation and the added value by certification from the three dimensions of sustainable development. For instance, economic – competitiveness in the global market, environmental – improvements, awareness and education, and social – improved relationships with stakeholders.

On the other hand, **developers** and **certifiers** stressed the need for more training, education and competence of internal and external auditors. They believe there could be substantial improvements on these issues. Once again, it is demonstrated that understanding of the Standard is the key for a successful implementation. What is meant here by “successful implementation” is one carried out in a “*smoother, faster, effective and sustainable*” way (Zutshi & Sohal, 2004, p.399).

ISO 14001 certification

Implementers are very positive about the future uptake of ISO 14001. Predominantly, in developing countries it was thought that the implementation speed will increase there, and many more organisations will seek certification than in developed countries. The author relates this optimism to Sunderland's declaration “*the EMS standards have focused industry attention on the environment as a business issue*” (Sunderland, 1997, p.131), and organisations' desire to comply with regulation that becomes progressively more stringent across the globe.

From the **developers'** and **certifiers'** perspectives, it is believed that certification will continue to grow as a market requirement. Therefore, it is reasonable that organisations from developing countries and economies in transition continue to get certified in the aim to

³⁸ It is important to keep in mind that **implementers** represent the views mostly from consultants. Therefore, this desire is not altogether surprising.

open markets. Regarding SMEs globally, as there has been EMS promotion among them it is possible that more SMEs will implement ISO 14001. Nevertheless the decision to obtain the certificate will be mostly driven by customers' requirements.

In contrast, **developers** also predicted that there is the possibility of the number of certificates decreasing if, and only if, its credibility continues to decline. Hence, the author speculates that this will open more initiatives for self-declaration networks or second-party recognition, especially for SMEs. However, it may only happen for local or closed markets, not if there is a desire to reach new and international markets.

On the other hand, **certifiers** judge that experienced organisations on EMS that have been certified for many years will most probably not renovate the certificate. The author reflects that those organisations might reject the certificate due to their maturity on handling environmental issues and/or their recognised reputation.

Hence, a general trend on the future of ISO 14001 certification cannot be stipulated. Firstly, because there have been fewer certificates than expected and secondly, because the uptake in different countries is far from standard: in some it is growing, in some others it is stable and in others it is even decreasing (see Figure 2-7 and Table 3-1).

Integration

Developers, implementers and **certifiers** agreed on the trend to integrate or combine management systems ISO 14001 with ISO 9001 and OHSAS 18001. Not surprisingly, **implementers** and **certifiers** were more in favour of integration, with particularly the latter pointing out its importance. The reason behind this is implementation effectiveness, not only economically, but also administratively.

Developers do not see much possibility of the emergence of just one standard for management systems, at least not in the near future (10 years). Further, there was disagreement on integration due to the focus of each standard, namely ISO 14001 – environment, ISO 9001 – quality, and OHSAS 18001 – health and safety; declaring that their roles “do not necessarily apply” to every organisation because of the nature of its activities. Therefore, a standard for integrated management systems seems to be too complex. From this a question arises: namely, too complex for whom?

The author believes that since organisations have already been integrating or combining management systems, the decrease on administrative burden and its cost effectiveness almost certainly outweigh the complicated implementation of an integrated system. Otherwise organisations would not have moved in such a direction in enacting such integration. Thus, the complexity of this issue is related to the creation of an integrated standard. Hence, the question remains: to what extent the standard on integrated management systems is needed and whether this will then be considered bureaucracy?

7 Conclusions

The environmental management systems standard ISO 14001 *per se* can neither save the world nor be seen as just a bureaucratic system.

First of all, does anybody know how to save the world? It is probably known how to improve it. One way is through *the journey of sustainable development*,³⁹ where ISO 14001 is an important tool in addressing the environmental pillar of sustainable development, having further positive implications among the two others (economic and social). The positive implications are the following chain of benefits gained by adoption of ISO 14001, irrespective of the actor⁴⁰ or the location:⁴¹

- Environmental performance improvements, subsequently costs savings and environmental and legal compliance;
- Therefore, confidence among stakeholders and better relationship with regulators;
- Competitiveness and better image; and
- Environmental awareness and commitment among personnel.

Secondly, according to this study's findings it cannot be said that ISO 14001 is just another bureaucratic system! In fact, views on the bureaucracy of ISO 14001 were only related to the amount of paperwork, therefore the actors are the ones that are making it bureaucratic. On the one hand, inexperienced implementers tend to over document. On the other, certifiers could require too much documentation. However, in both cases, that is voluntary or involuntary misinterpretations of the Standard.

The following are other identified problems with ISO 14001:

- The new version of the Standard, ISO 14001:2004 is still system oriented rather than performance oriented. Declared by **developers** and **certifiers**;
- Lack of understanding and misinterpretations of the Standard, as well as its difficult requirements particularly identification and assessment of environmental aspects, result in the need for assistance, which in most of the cases is a consultant. Consequently, extra costs in ISO 14001 implementation. This was mentioned by the three actors;
- Implementation costs of the ISO 14001 are high, especially for developing countries and SMEs. Claimed primary by **implementers** but **developers** and **certifiers** were also aware of this;
- Over documentation, caused by lack of experience of implementing organisations and auditors that certify it. This was identified by all the actors;
- **Implementers** considered certification costs to be higher than implementation costs. Corroborating the direct link of the ISO 14001 standard with certification system;

³⁹ Stressed many times by Professor Donald Huisinigh during his lessons for the course: Introduction to Preventative Environmental Strategies (IPES). IIIIEE MSc programme in Environmental Management & Policy. [2005, August - September].

⁴⁰ When referring to "the actor" or "the actors" this means **developers, implementers** and **certifiers**.

⁴¹ Developing countries or developed countries.

- Lack of competence of internal and external auditors, this is a key for continual improvements. This problem was identified by the three actors; and
- Credibility of ISO 14001 certification has been decreasing. This problem is a source of concern for **developers** and **certifiers**, but **implementers** were not much aware of it.

Benefits from and problems with ISO 14001 have led to the expectations of the actors being either fulfilled or unfulfilled:

- **Developers** expected to introduce an EMS standard. As ISO 14001 is commemorating its 10th anniversary, this expectation was fulfilled;
- **Implementers** expected to improve their environmental performance irrespective of their motivations in order to obtain some benefits; and
- **Certifiers** expected to issue certificates by ensuring environmental performance of the certified organisations.

Expectations of the **implementers** and **certifiers** have been fulfilled to a certain extent. A complete fulfilment of these actors' expectations cannot be assumed due to the different economic, political, social and cultural conditions that affect organisations around the world.

Finally, it is quite difficult to predict the future of ISO 14001 because there is no certainty as to how different aspects (economic, political, social and cultural) of countries will develop and how they will then interact with one another and with ISO 14001. However some possible scenarios are mentioned as follows:

- If the enthusiasm of developing countries continues and more SMEs are persuaded, implementation of ISO 14001 will continue to grow and difficulties will reduce as a result of improvements in training and education programmes, and competence of external and internal auditors;
- If in developed countries ISO 14001 implementation speed slows down and less large organisations renovate their certificates, there is a possibility that the implementation of ISO 14001 among SMEs will compensate this trend. This could happen if more promotion and support is given to them;
- Almost the only certain issue is that certification will continue to grow as a market requirement. Therefore, organisations in economies in transition and developing countries that want to compete in the international market will seek to obtain the certificate or renovate those already issued;
- Credibility of ISO 14001 certification will play an important role in this process. However, it is not known how this could affect implementation. It will be highly dependent on the promotion of ISO 14001;
- Integration of management systems standards, ISO 14001, ISO 9001 and OHSAS 18001, has a great potential to continue being practised by organisations across the globe.

According to the above scenarios, it could be said that ISO 14001 will shift from being used by the so called "dirty companies" (large and multinational companies and the industry

sector), to being adopted more by SMEs, public, financial, health, and other sectors, and for local industries and organisations.

In a nutshell, ISO 14001, the standard on EMS is an available tool that can improve organisations' environmental performance in any place around the globe, if *and only if* it is properly applied. A proper implementation depends on the commitment of the top manager and how responsibilities are delegated among environmentally aware and committed personnel. Thus, ISO 14001 can contribute to *the journey towards sustainable development*.

8 Recommendations

The author identifies two special issues to be focused on in order to improve the progress of ISO 14001, they are bureaucracy and the credibility of ISO 14001.

Many stakeholders have highlighted the bureaucracy of ISO 14001, based mainly on the burden of paper work. The author believes that the Standard is not bureaucratic *per se*, claiming rather that implementers and certifiers are making it bureaucratic through the tendency to over document. Moreover, considering the requirements that ISO 14001 users have identified as difficult, primary identification and assessment of environmental aspects, developers of the Standard are responsible in this case. Hence, the author suggests that to overcome these aspects that make ISO 14001 bureaucratic, better information, education, training and guidance on how to implement ISO 14001 are needed. It is also important to make further improvements to the wording and explanations of the Standard, in order that the user can fully understand irrespective, of their education. Furthermore, in emphasising that organisations should not only be focused on obtaining the certificate as an ultimate goal, there is a need for greater promotion of ISO 14004, *“which should be the starting point, because it guides in an effective and efficient way the application of EMS”*.⁴² Initiatives are better when they are targeted bottom-up, instead of top-down as they have been practised.

Regarding the credibility of ISO 14001, serious attention needs to be given owing to the great impact reliability makes on ISO 14001 uptake, i.e. implementation and certification. At the moment, there is no specific initiative to address the trustworthiness not only of certification agencies but also of accreditation bodies. Therefore, rules of accreditation bodies need to be controlled to ensure that certification agencies procedures are well applied in organisation’s implementation audits. The best way to *“watch the watchers”*⁴³ is through a surveillance mechanism in which many stakeholders participate, for instance involving accreditation and certification bodies, NSBs, environmental authorities, regulators, universities, NGOs, among others.⁴⁴

8.1 Future research

During the development of this thesis four areas for future work were identified that would have helped the formulation of more precise conclusions in this project. As the nature of this research was qualitative and comparative between developing and developed countries, the following recommendations address quantitative and qualitative studies for organisations, irrespective of their size, location or nature of their activities.

The first area of research would be a quantitative comparison of the environmental performance of organisations prior to and after implementing the Standard. This would help to draw conclusions on the ISO 14001 implementation’s contribution to environmental improvements and to continual performance improvements.

⁴² Declared by a **developer** during the interview.

⁴³ The “watchers” are the accreditation bodies. The original phrase was mentioned by a **developer** when explained the accreditation process: *“Who watches the watchers watch? ... The watchers!”*.

⁴⁴ This was also mentioned during an interview with a **certifier**.

A second area for future work would be an economic analysis of the implementation and certification of ISO 14001. A cost-benefit analysis comparing organisations of different size, countries and activities, taking into account if they have already an EMS in place or not, and also considering the legal system of the country.

The third potential field for research is the implications of the credibility of ISO 14001 certification, the solutions for this concern and the consequences for self-declaration and second-party recognition.

Finally, an investigation of the need for an integrated standard on management systems among developers, implementers and certifiers. This should assess the differences between the current practice of integration or combination of three different standards (ISO 14001, ISO 9001 and OHSAS 18001) with the implementation of just one standard.

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Abbreviations

BS	British Standards
CD	ISO Committee Draft
CSR	Corporate Social Responsibility
DIS	ISO Draft International Standard
EA	European Accreditation
EMAS	Eco Management and Audit Scheme
EMS	Environmental Management System
FDIS	ISO Final Draft International Standard
NSBs	National Standards Bodies
IAAC	Interamerican Accreditation Cooperation
IAF	International Accreditation Forum
ILAC	International Laboratory Accreditation Cooperation
ISO	International Organization for Standardization
NGOs	Non-governmental Organisations
NP	ISO New Proposal
PAC	Pacific Accreditation Cooperation
PDCA	Plan-Do-Check-Act
SAGE	Strategic Advisory Group on the Environment
SC	ISO Subcommittees
SMEs	Small and Medium sized Enterprises
SR	Social Responsibility
TC 207	ISO Technical Committee – Environmental Management
TMB	ISO Technical Management Board
UNCED	United Nations Conference on Environment and Development
WD	ISO Working Draft
WG	ISO Working Group

Appendix I – List of developed and developing regions and countries

Developing regions	Developed regions	Economies in transition
Africa	Northern America	<i>Commonwealth of Independent States:</i> Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.
Central America and the Caribbean	Europe	
South America	Japan	
Asia excluding Japan	Australia and New Zealand	<i>Transition countries of South-Eastern Europe:</i> Albania, Bosnia and Herzegovina, Bulgaria, Montenegro, Romania, Serbia, The former Yugoslav Republic of Macedonia
Oceania excluding Australia and New Zealand		

Source: United Nations, 2006.

Appendix II – List of the ISO 14000 family of standards – Environmental management

	Designation	Title
ENVIRONMENTAL MANAGEMENT	ISO 14001:1996	Environmental management systems – Specification with guidance for use
	ISO 14001:2004	Environmental management systems – Requirements with guidance for use
	ISO 14004:2004	Environmental management systems – General guidelines on principles, systems and support techniques
	ISO/WD 14005 *	Environmental management systems – Guidelines for a staged implementation of an environmental management system, including the use of environmental performance evaluation
	ISO/TR 14061:1998	Information to assist forestry organizations in the use of the Environmental Management System standards ISO 14001 and ISO 14004
ENVIRONMENTAL AUDITING	ISO 14015:2001	Environmental management – Environmental assessment of sites and organizations (EASO)
	ISO 19011:2002	Guidelines for quality and/or environmental management systems auditing
ENVIRONMENTAL LABELLING	ISO 14020:2000	Environmental labels and declarations – General principles
	ISO 14021:1999	Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)
	ISO 14024:1999	Environmental labels and declarations – Type I environmental labelling – Principles and procedures
	ISO/TR 14025:2000	Environmental labels and declarations – Type III environmental declarations
ENVIRONMENTAL PERFORMANCE EVALUATION	ISO 14031:1999	Environmental management – Environmental performance evaluation – Guidelines
	ISO/TR 14032:1999	Environmental management – Examples of environmental performance evaluation (EPE)
LIFE CYCLE ASSESSMENT (LCA)	ISO 14040:2006	Environmental management – Life cycle assessment – Principles and framework
	ISO 14041:2006	Environmental management – Life cycle assessment – Goal and scope definition and inventory analysis
	ISO 14042:2006	Environmental management – Life cycle assessment – Life cycle impact assessment
	ISO/TR 14047:2003	Environmental management – Life cycle impact assessment – Examples of application of ISO 14042
	ISO 14043: 2006	Environmental management – Life cycle assessment – Life cycle interpretation
	ISO 14044:2006	Environmental management – Life cycle assessment – Requirements and guidelines
	ISO/TS 14048:2002	Environmental management – Life cycle assessment – Data documentation format
	ISO/TR 14049:2000	Environmental management – Life cycle assessment – Examples of application of ISO 14041 to goal and scope definition and inventory analysis

VOCABULARY	ISO 14050:2002	Environmental management – Vocabulary
	ISO/CD 14050 *	Environmental management – Vocabulary
PRODUCT DESIGN & DEVELOPMENT	ISO/TR 14062:2002	Environmental management – Integrating environmental aspects into product design and development
ENVIRONMENTAL COMMUNICATION	ISO 14063:2006	Environmental management – Environmental communication – Guidelines and examples
CLIMATE	ISO/FDIS 14064	Guidelines for measuring, reporting and verifying entity and project-level greenhouse gas emissions
	ISO/DIS 14065	Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition
PRODUCT STANDARD	ISO Guide 64:1997	Guide for the inclusion of environmental aspects in product standards
ACCREDITATION	ISO/IEC Guide 66:1999	General requirements for bodies operating assessment and certification/registration of environmental management systems (EMS)
SOCIAL RESPONSIBILITY	ISO/WD 26000 *	Guidance on social responsibility

By August 2006.

NOTES: *Standards under development. AWI = Approved Work Item. WD = Working Draft. CD = Committee Draft. DIS = Draft International Standard. FDIS = Final Draft International Standard. TR = Technical Report. ISO/IEC Guide 66 was developed by the ISO Policy development Committee on conformity assessment (ISO/CASCO).

Source: ISO, 2006; and (Brorson & Almgren, 2006, p.18).

Appendix III – Interview with *developers*

NEGOTIATION PROCESS (1992 – 1995)

1. What was your role in the process of establish the ISO 14001 standard?
2. Why did you participate?
3. What were your expectations on the environmental management standard?
4. What were the general expectations from the ISO/TC 207? Has the expectations been fulfilled? Where?
5. Did you fight/discuss to get something into the standard?
6. What countries/individuals were most positive to establish the new standard? What were their arguments?
7. Who were against it? What were their arguments?
8. What was the role of developing countries representatives? Was it considered that they were minority?
9. Do you think something was missing in the first version of ISO 14001?

1-3 YEARS AFTER THE STANDARD WAS LAUNCHED (1996 – 1999)

1. How was the ISO 14001 standard received? (Country specific)
2. Give examples of criticism? Give examples of positive findings?
3. At that time did you see any special problems associated with the standard?
4. What do you think was the most positive effect of ISO 14001 shortly after it was launched?

CURRENT SITUATION (2004 – 2006)

1. What is your current relationship with/perception of ISO 14001?
2. What is your opinion of the new version of the standard?
3. In a number of countries ISO 14001 is a big success but in some countries it is not. What is your explanation to that?
4. Apart from multinational companies what other kind of businesses are adopting ISO more actively?
5. What is your view about over documentation and lack of resources (personnel, economic, time) resources as the top barriers for ISO 14001 implementation mostly in developing countries and SMEs? How could this be improved?
6. What do you think about the role of governments to promote the ISO 14001 standard?
7. Do you think that certifying organisations could be stricter in developed countries rather than in developing ones?

FUTURE

1. What is your view of the future role of ISO 14001?
2. If you got the chance to improve the implementation of ISO 14001 would you put focus on (please motivate your answer): a) Contents of the standard? b) Training programmes, educational material? c) Internal and external environmental audits? d) Communication of environmental performance? e) Other?

3. What is your view of the future organisation of environmental issues in a company?
What will be the role of the environmental manager?
4. Do you think that ISO 14001 certification will continue to grow as a market requirement? If so where?
5. Will be an integration of management standards as ISO 14001, ISO 9001 and OHSAS 18001 which will be needed just one certificate?

Appendix IV – Questionnaire to *implementers*

Personal Information

Nationality

Batch (please indicate the number)

Academic background

Current job

Country of the current job

Previous jobs

Note: When in the questionnaire is referring to “your country”, refers to the country where you are actually working, the one you may have the most knowledge of ISO 14001.

Will you refer to “your country” as?

- Your country of origin
- The country where you are working at the moment or have the most knowledge

Please write the country you will refer as "your country"

Personal knowledge of ISO 14001

This session aims to find some personal experiences from your work with ISO 14001.

1. Have you ever worked with ISO 14001?

- Yes (please continue)
- No (you do not have to continue, but if you feel like your input will be appreciated)

2. How many years of work experience do you have?

2a. How much time of your work experience do you have with ISO 14001?

- Less than 10%
- 10% - 30%
- 30% - 50%
- 50% - 70%
- 70% - 99%
- 100%

Comment _____

3. What has been your role when working with ISO 14001?

- Implementing and maintaining ISO 14001 in a company.
- Implementing and maintaining ISO 14001 in a public organisation (e.g. hospital, authority, community).
- Environmental consultant.
- Environmental auditor.
- Academic research/teaching.
- Environmental auditor for a certification body.
- Other (please specify).

Comment _____

4. Could you please give some details of your work with the ISO 14001 standard? (Do not miss when and where!)

Truths or myths about ISO 14001

Please comment the following statements as:

5. The ISO 14001 standard does not contribute to the organisation's environmental performance. It just increases the amount of paper work.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

6. Many organisations are satisfied with the implementation with ISO 14001 and claim that they have improved the environmental performance and saved resources and money.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

7. Implementation costs of the ISO 14001 are high, consequently constitutes a barrier for small and medium sized firms globally.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

8. Developing countries and economies in transition have economic and political disadvantages in implementing the ISO 14001 standard.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

9. During the creation of the ISO 14001 standard very few environmental stakeholders (i.e. NGOs, national governments, local and regional authorities, governmental and nongovernmental institutions, the public from around the globe) were involved. Consequently, in practise ISO 14001 does not cover the interest of all stakeholders, it is just for “some”.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

10. The environmental management standard ISO 14001 does not contribute to sustainable development.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

11. Identification and assessment of environmental aspects have been one of the most difficult requirements of ISO 14001 implementation. Especially, when it comes to the criteria needed for evaluating aspects' significance.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

12. In developing countries and economies in transition, wording and difficult language of the ISO 14001 makes it hard to implement the standard.

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

13. It is becoming more and more common for organisations to combine or integrate ISO 14001 with systems for quality (e.g. ISO 9000) and health and safety (OSHAS 18001).

- strongly disagree
- slightly disagree
- neither disagree nor agree
- slightly agree
- strongly agree

Comment

In the following question evaluate the options a) to d) from the least problematic (= 1) to the most problematic (= 4).

14. The greatest problems that developing countries have been facing with ISO 14001 standard are:

a) Cost of implementation

1 2 3 4

b) Lack of enforcement of environmental legislation

1 2 3 4

c) Demanding documentation

1 2 3 4

d) Lack of method/criteria to assess environmental aspects significance

1 2 3 4

Comment

Current situation of ISO 14001

This section aims to get your experiences with ISO 14001 in a country specific context.

15. What do you think is ISO 14001 implementation in your country?

- Very successful
- Quite successful
- Neither successful nor failure
- Slightly failure
- Failure

Please motivate your answer

16. Do you know about the success or failure of ISO 14001 implementation in any other country; could you please indicate where and why?

For questions 17-20 please evaluate the given options according to the current situation in your country. If some of the given options do not apply then do not grade it. This is the same type of question as the number 14, which aims to prioritise the options a) to i).

17. How do you prioritise the organisations that actively promote ISO 14001 in your country? (1= promotes it less actively; 9= promotes it more actively)

a) The national standards organisation

1 2 3 4 5 6 7 8 9

b) Leading companies (fore runners)

1 2 3 4 5 6 7 8 9

c) Mass media

1 2 3 4 5 6 7 8 9

d) Universities and other institutions for education

1 2 3 4 5 6 7 8 9

e) Consulting companies

1 2 3 4 5 6 7 8 9

f) Governmental institutions

1 2 3 4 5 6 7 8 9

g) Certification bodies

1 2 3 4 5 6 7 8 9

h) Customer demands

1 2 3 4 5 6 7 8 9

i) Other (please specify)

1 2 3 4 5 6 7 8 9

Comment

18. What are the main driving forces of ISO 14001 implementation (based on your own experiences and/or issues that are discussed in your country)? (1= the weakest; 10= the strongest)

a) Gains from systematisation and structure of environmental work

1 2 3 4 5 6 7 8 9 10

b) Genuine environmental concern

1 2 3 4 5 6 7 8 9 10

c) Customer requirements and competitive advantage

1 2 3 4 5 6 7 8 9 10

d) To lower operational costs

1 2 3 4 5 6 7 8 9 10

e) Improve image

1 2 3 4 5 6 7 8 9 10

f) To reduce non-tariff trade barriers (restrictions to imports which are not in the usual form of a tariff, e.g. quotas, restrictive licences, import bans, seasonal import regimes, product classification, unfair customs procedures, among others)

1 2 3 4 5 6 7 8 9 10

g) Requirements of financial institutions

1 2 3 4 5 6 7 8 9 10

h) Requirement from the mother company

1 2 3 4 5 6 7 8 9 10

i) Environmental regulation

1 2 3 4 5 6 7 8 9 10

j) Other (please specify)

1 2 3 4 5 6 7 8 9 10

Comment

19. What are the benefits from implementation of ISO 14001 (based on your own experiences and/or issues that are discussed in your country)? (1= the least beneficial; 9= the most beneficial)

a) Cost reductions

1 2 3 4 5 6 7 8 9

b) Satisfied customers

1 2 3 4 5 6 7 8 9

c) Commercial benefits

1 2 3 4 5 6 7 8 9

d) Green image, giving competitive advantage

1 2 3 4 5 6 7 8 9

e) Less environmental impacts

1 2 3 4 5 6 7 8 9

f) Create confidence among the stakeholders

1 2 3 4 5 6 7 8 9

g) Ensure legal compliance

1 2 3 4 5 6 7 8 9

h) Benefits from the government i.e. regulatory relief, reduction of inspections, incentives for certification (e.g. technical assistance, free training, cash subsidies)

1 2 3 4 5 6 7 8 9

i) Other (please indicate)

1 2 3 4 5 6 7 8 9

Comment

20. What are the problems related with ISO 14001 (based on your own experiences and/or issues that are discussed in your country)? (1= the least problematic; 9= the most problematic)

a) The system does not guarantee any improvement in the company's environmental performance

1 2 3 4 5 6 7 8 9

b) Implementation and maintenance of the system costs

1 2 3 4 5 6 7 8 9

c) Demanding documentation

1 2 3 4 5 6 7 8 9

d) Unclear guidance and difficult to understand the different requirements

1 2 3 4 5 6 7 8 9

e) Internal and external auditors are not competent enough

1 2 3 4 5 6 7 8 9

f) Corruption could bias the certification process

1 2 3 4 5 6 7 8 9

g) The fact that ISO 14001 does not require to go beyond legal requirements

1 2 3 4 5 6 7 8 9

h) Possibility of “hiding” environmental improvements in order for a company to be in compliance with the requirement of continuous improvement

1 2 3 4 5 6 7 8 9

i) Other (please specify)

1 2 3 4 5 6 7 8 9

Comment

21. Do you think the credibility of the ISO 14001 in your country is:

High Medium Low

Comment

22. Let us assume that you should promote ISO 14001 in your country. What would be your strongest arguments?

23. Let us assume that you think that ISO 14001 should not be implemented in your country. What would be your strongest arguments against it and what would you suggest instead?

24. ISO 14001 was recently launched in an updated version (ISO 14001:2004). What do you think about that?

- Very useful
- Useful
- Irrelevant
- Unnecessary
- Don't know

Comment

25. ISO 14001 was introduced 10 years ago. Have you noticed any difference in how the standard currently is applied compared to the practise of the past (i.e. 5-10 years ago)?

- No, nothing has changed.
- Yes, the practise is currently less formal.
- Yes, the practise is currently more formal.
- Don't know.

Comment

26. Let us assume that you would be responsible for the next update of ISO 14001, what would be your main suggestions for improvements?

The future of ISO 14001

27. What do you think about the future of the ISO 14001 in your country?

- Implementation speed will increase and many more organisations will seek certification.
- Implementation speed will slow down. Slow increase in number of certified organisations.
- Status quo concerning the number of certified organisations.
- Certified organisations will not renew their certificates. The number of certified organisations will decrease.
- Alternative systems, that are less strict, will be launched (e.g. “ISO light”).
- Other (please provide examples)

28. How will implementation of ISO 14001 differ between developing and developed countries in the coming years?

29. Will you work with ISO 14001 in the coming years?

- Yes, even more than in the past.
- Yes, at the same relatively high level.
- Yes, at the same relatively low level.
- Probably less than before.
- Not at all.
- Other (please specify)

30. We have so far not discussed EMAS in this questionnaire. What is your view on the future of EMAS in your country?

- Positive. EMAS will gain ground in my country.
- Status quo.
- Negative. ISO 14001 has beaten EMAS.
- Other (please specify)

Appendix V – Interview with *certifiers*

ISO 14001 CERTIFICATION PROCESS

1. Could you please describe the certification process? Is there any special attention of some issues, which ones and why?
2. What are the driving forces for an organisation to obtain the certificate? Have you notice any difference between developed and developing countries?
3. What are the differences when certifying an organisation in developed and developing countries, if any?
4. What is the importance of the certification process in ISO 14001? What are the benefits achieved by certification in both developing and developed countries?
5. What are the problems related to a certification process?
6. What is your view on not accredited certification bodies?

THE STANDARD

1. What were your expectations on ISO 14001 when it was launched in 1996?
2. What is your opinion of the new version of the standard? What do you think is still missing in the standard?
3. What is your view about extra documentation of ISO 14001 implementation? How could this be improved?

ISO 14001 IMPLEMENTATION

1. In a number of countries ISO 14001 is a big success but in some countries it is not. What is your explanation to that?
2. Apart from multinational companies what other kind of businesses are adopting ISO more actively?
3. What do you think about the role of governments to promote the ISO 14001 standard?

FUTURE OF ISO 14001

1. What is your view of the future role of ISO 14001?
2. What is your view of the future organisation of environmental issues in a company? What will be the role of the environmental manager?
3. Do you think that ISO 14001 certification will continue to grow as a market requirement? If so, where?
4. What is your opinion on the integration of management standards as ISO 14001, ISO 9001 and OHSAS 18001?