

BENEFITS OF EMS – A WORLD VIEW

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EMS in the World

Environmental management systems (EMS) became formalized only in the 1990's, firstly with the publication of the British standard, BS7750 in 1992; then the European Community's voluntary regulation, the Eco-Management and Audit Scheme (EMAS) in 1993, and the International Organisation for Standardisation's ISO 14001:1996 *Environmental management systems – specification with guidance for use*. ISO 14001 has undergone its first review, and was republished in November 2004; however, there are few substantive changes, mainly some clarification of meaning or concept and changes in wording. The ISO standards are reviewed every five years, and it is anticipated that there will be substantive changes at the next update, to commence in 2006, which will be aimed at bringing ISO 14001 more in line with ISO 9001, the quality management system.

ISO 14001 is part of the ISO 14000 series of environmental management standards. It is the only one in the series against which certification can be gained, through a certification body accredited by JAS-ANZ in Australia and New Zealand. JAS-ANZ is the Joint Accreditation System of Australia and New Zealand [<http://www.jas-anz.com.au/>], a not for profit, self funding international organisation established under a Treaty between the Governments of Australia and New Zealand on 30 October 1991. JAS-ANZ acts as the joint accreditation body for Australia and New Zealand for certification of management systems, products and personnel. There are equivalent organisations in other countries authorized to accredit certification bodies (which are known as 'registrars' in North America).

Because ISO 14001 is officially adopted in Australia and New Zealand, it is now correctly referred to as "AS/NZS ISO 14001:2004 Environmental management systems – Requirements with guidance for use".

Currently the ISO 14001 series consists of several series of standards, and the emerging Climate Change standards, depicted in Figure 1. This diagram was presented at The Auditing Roundtable winter meeting in Phoenix, Arizona in January 2004, by the Chairman of TC207, the Technical Committee of the International Organisation for Standardisation

responsible for development of the environmental management standards. It presented for the first time the development of standards for greenhouse gas quantification, reporting validation and verification (ISO 14064 series) and includes a new standard for environmental communication (ISO 14063).

It should be understood that all of the ISO environmental standards other than the “specification” standard ISO 14001 are designed to support an EMS and should be used in conjunction with an EMS; they can not be independently certified.

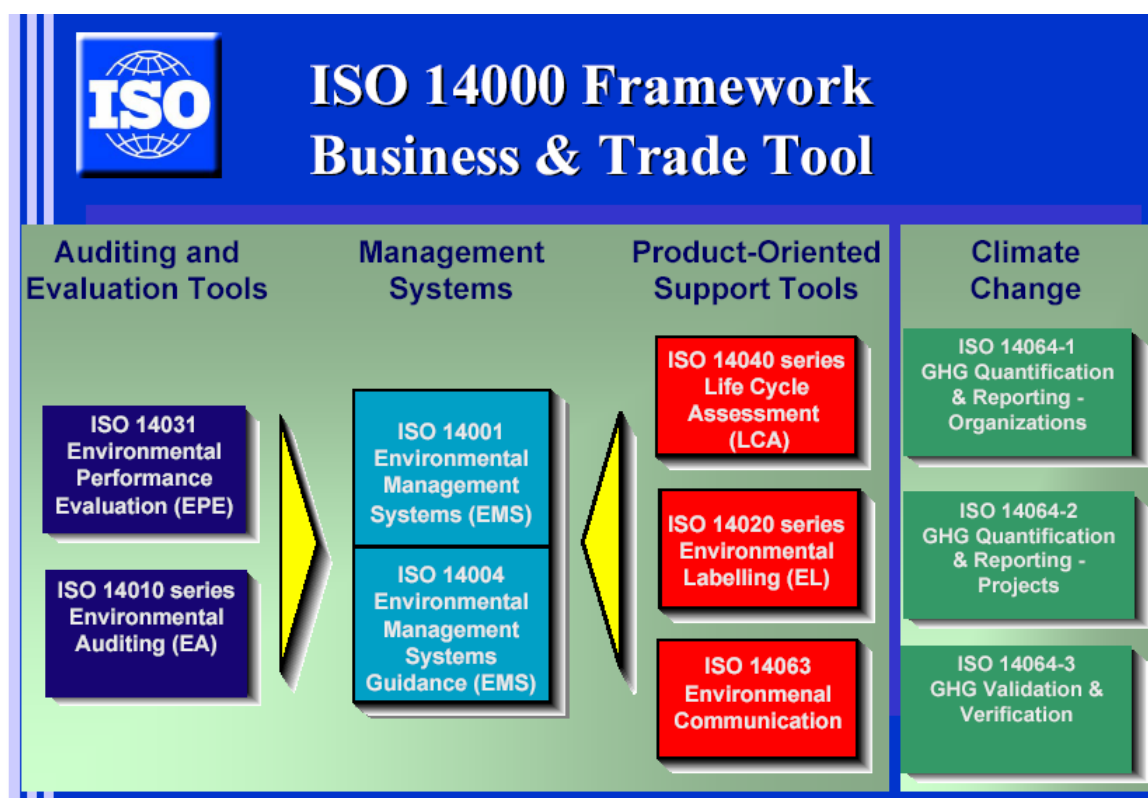


Figure 1. The ISO 14000 series.

Source: Chairman of TC 207, January 2004, The Auditing Roundtable Winter Meeting, Phoenix Arizona USA.

There has been a dramatic uptake of the ISO 14001 standard worldwide, with 61,287 organisations known to be certified as at December 2003, the last full count available. The number of certified organisations for each country is shown in Figure 2. Japan has by far the greatest number of certified companies, with 13,819 in December 2003. According to the survey by the Environmental Management Standard Council Japan, the number of Japanese

companies certified to ISO14001 increased to 16,207 as of 31 August, 2004. In Japan and generally in Asia, the electrical and electronics sector continues to lead in ISO14001 certification, accounting for around one-fifth of the total, followed by the chemicals industry, machinery and equipment, construction and the basic and fabricated metals industries, which includes the automotive industry.

The next largest number of certifications is in China, with 5,064, just one-third of those in Japan, but growing rapidly. Next come Spain (4,860), Germany (4,150), and USA (3,474). By comparison, Australia has 835 certified EMS's, which is a reduction from over one thousand just a couple of years ago, and New Zealand has 100 certificates.

Registrations to the EU Eco-Management and Audit Scheme (EMAS) are shown in Figure 3. By the middle of 2004, more than 4000 sites in more than 3000 organisations are registered as EMAS organisations. Most of them are companies from the industrial sector, but since mid-2001, when EMAS was opened to all other economic activities, more and more companies from the service sector and local authorities have joined the scheme.

EMAS is a management tool for companies and other organisations to evaluate, report and improve their environmental performance. The scheme has been available for participation by companies since 1995 (Council Regulation (EEC) No 1836/93 of 29 June 1993) and was originally restricted to companies in industrial sectors.

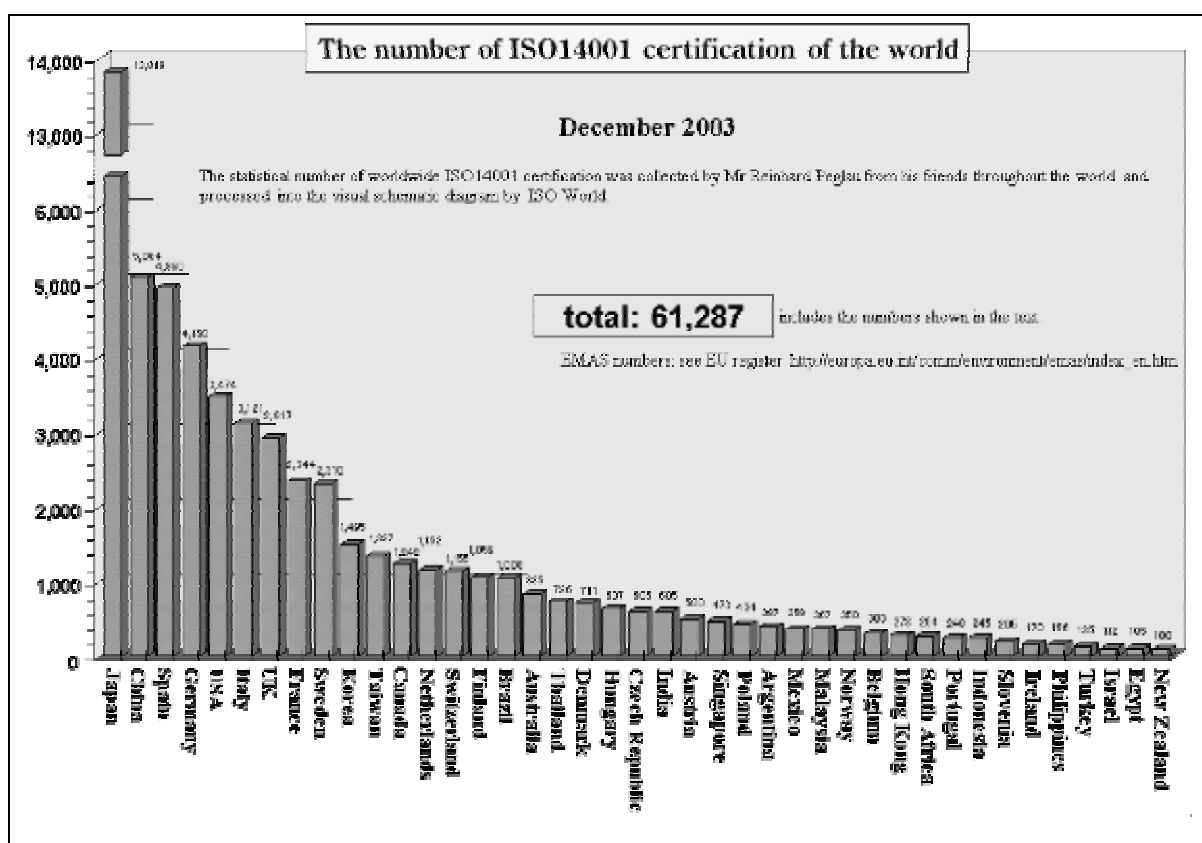
Since 2001 EMAS has been open to all economic sectors including public and private services (Regulation (EC) No 761/2001 of the European Parliament and of the Council of 19 March 2001). In addition, EMAS was strengthened by the integration of ISO 14001 as the environmental management system required by EMAS; by adopting an attractive EMAS logo to signal EMAS registration to the outside world; and by considering more strongly indirect effects such as those related to financial services or administrative and planning decisions.

Participation in EMAS is voluntary and extends to public or private organisations operating in the European Union and the European Economic Area (EEA) which includes Iceland, Liechtenstein, and Norway. An increasing number of candidate countries for EU membership are also implementing the scheme in preparation for their accession to the EU.

What is an EMS?

An EMS developed to ISO 14001 is required to implement five principles, including 18 sections, to an auditable standard, as shown in Figure 4. ISO 14001 is a conformance standard and does not prescribe performance goals. These may come from legal requirements, licence and permit conditions, adopted corporate standards, industry codes of

practice, World Bank guidelines and many others. The objective of an EMS is to achieve continual improvement of the EMS with the aim of achieving improvement in environmental performance.



The numbers of the other countries missing in the diagram are as follows – Iran:98, Rumania:96, UAE:92, Colombia and Greece:90, Chile:80, Estonia:74, Slovak Republic:73, Lithuania:72, Vietnam:56, Croatia:52, Russian Federation:48, Costa Rica:40, Luxembourg and Uruguay:32, Peru:31, Pakistan:26, Cyprus:21, Latvia and Liechtenstein:20, Tunisia:18, Bulgaria and Venezuela:17, Jordan:16, Sri Lanka:13, Serbia and Montenegro:12, Morocco:11, Nigeria and Zimbabwe:10, Saudi Arabia and Yugoslavia:9, Syrian Arab Republic:8, Trinidad & Tobago:7, Oman:6, Azerbaijan, Bangladesh, Bolivia, Lebanon and Mauritius:5, Brunei, Malta, Namibia, Puerto Rico and Ukraine:4, Algeria, Bahrain, Barbados, Guyana, Iceland, Kuwait, Malawi and Monaco:3, Andorra, Belarus, Belize, Botswana, Cameroon, Ecuador, Greenland, Guatemala, Honduras, Macau, Qatar Senegal and Zambia:2, Bosnia and Herzegovina, Cambodia, Dominican Republic, Fiji, FYR of Macedonia, Ghana, Jamaica, Kazakhstan, Kenya, Mozambique, Myanmar, Nepal, Niger, Palestine, Panama, Saint Lucia, Seychelles, Sudan, Tanzania and Turkmenistan:1.

Figure 2. The number of ISO 14001 certifications in the world as at December 2003.
 Source: <http://www.ecology.or.jp/isoworld/english/analy14k.htm>

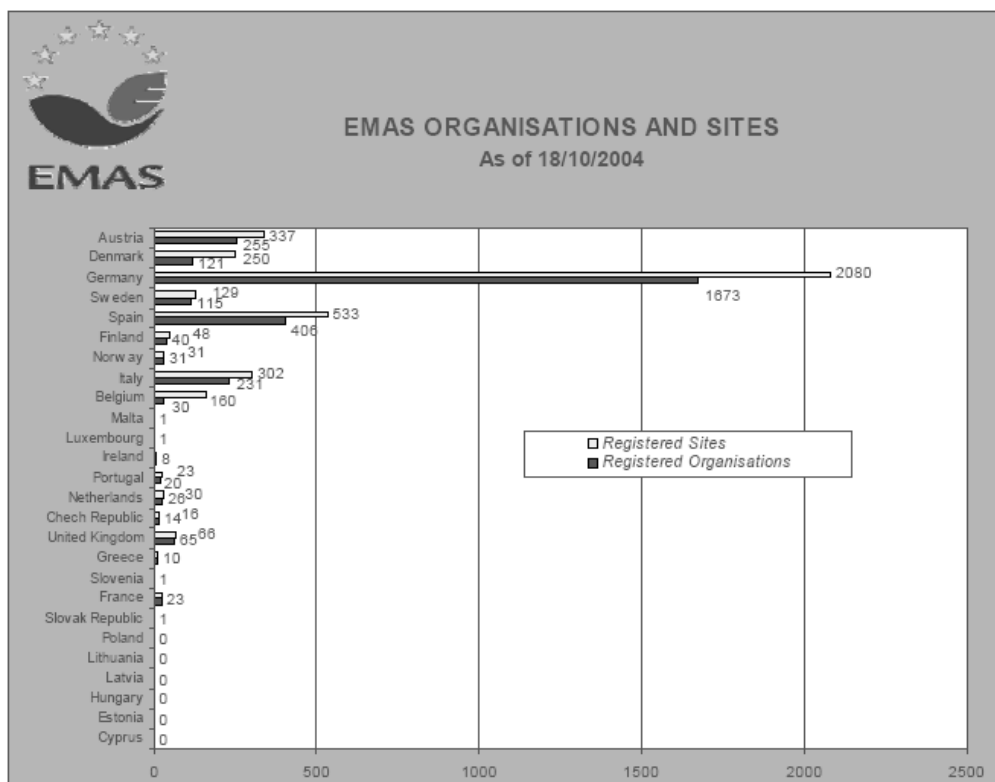


Figure 3. Registered EMAS organisations and sites as at 18 October 2004.

Source: http://europa.eu.int/comm/environment/emas/about/participate/sites_en.htm

Benefits of an EMS

The question arises, if some 65,000 organisations around the world are certified to either ISO 14001 or to EMAS (which now incorporates ISO 14001), and probably many more than that are using ISO 14001 as a model but are not seeking certification, is there any evidence of benefits to the environment and to the organisations in return for the expense and effort of implementing an EMS? In reality, ISO 14001 is still in its early days of worldwide experience, regardless of the large numerical uptake, as it was only published in 1996 and it takes time, up to several years, for an organisation to fully implement the standard and have a viable EMS. There have been few formal studies to date to determine whether there are benefits in implementing an EMS.

At the winter meeting of The Auditing Roundtable in Phoenix, Arizona in January 2004, the keynote speaker expressed an opinion that conformance-based environmental management systems, such as ISO 14001, are “fundamentally flawed”. What is the point, he asked, of

auditing systems that don't bring value? If certification is not a management requirement to enable entry into certain markets, or for other reasons, why are these systems needed?

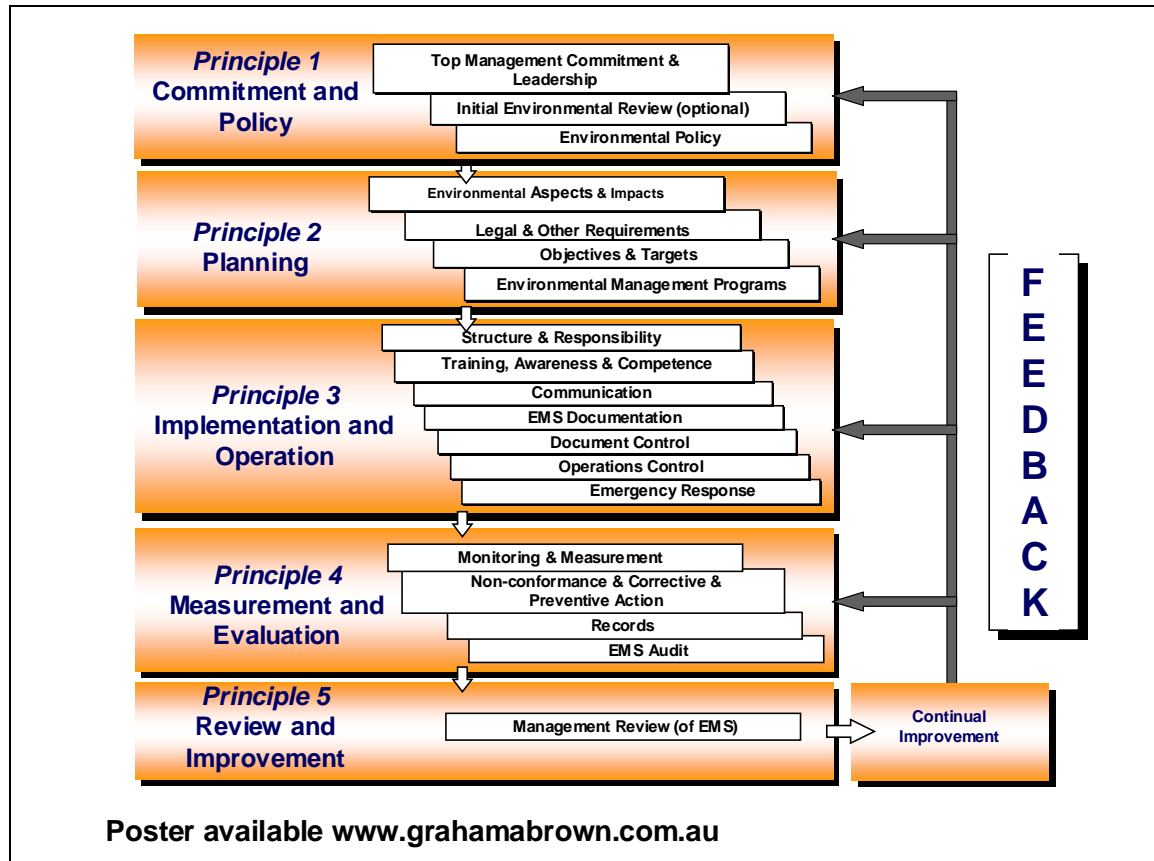


Figure 4. Implementation of an EMS to the ISO 14001 standard (based on ISO 14001:1996).

In practice, according to Richard MacLean (www.Competitive-E.com) ISO 14001 and EMAS implementation teams start with, and often get mired in, the paperwork. The standard requirement to “go through the process” can make it quite difficult to focus less on the details and develop an EMS with a strategic environmental direction. The standards do not require firms to establish performance improvement goals; they only require that a process is created to facilitate this action because they are procedural standards, not goal driven standards. The question is whether or not they drive even basic compliance. Certified companies have had compliance problems that have been in the news worldwide. Dioxin compliance problems at Ebara Corp., a Japanese facility certified in 1997, triggered questions about ISO’s effectiveness. This was followed by the largest Brazilian pollution

incident in 25 years at the certified Petroleo Brasileiro S.A. facility. Again in 2000, two Taiwanese ISO-certified facilities were involved in a hazardous waste dumping scandal. In Western Australia, the Alcoa alumina refinery at Kwinana, which was the first site to be certified to ISO 14001 in Australia, has a history of spills and illegal discharges, including seven significant spills reported to the Department of Environment over a four months period in 2004. One significant spill happened on 12 October 2004, when 15,000 litres of residue slurry overflowed from the main pipeline supplying the site. At the same time, the company was facing prosecution over the unauthorized discharge of as much as 1.3 million litres of caustic soda in June 2004.

A report published in January 2003 by the Department of Public Policy, University of North Carolina at Chapel Hill and commissioned by the US EPA, entitled *Environmental Management Systems: Do They Improve Performance?* (<http://www.epa.gov/EMS/volumeii.pdf>) concluded that “There is substantial evidence to suggest that introduction of an EMS had little effect on regulatory compliance at the facility level on the whole. Though a substantial number of facilities eliminated violations after EMS implementation – which suggests that introduction of an EMS at the facility improves regulatory performance to some degree – this is not a surprising result given that nearly all violations reported by these facilities were minor and likely included many of the sorts of paperwork and procedure violations which an EMS might be expected to improve. A lack of evidence that demonstrates statistically significant improvement in the number of non-compliances observed and the amount of regulatory fines reported limits our ability to make a stronger statement on the effectiveness of EMS to improve regulatory compliance. Furthermore, there was little evidence to suggest negative compliance outcomes as a result of EMS implementation at these facilities.”

Some commentators consider that in many respects, ISO 14001 and EMAS illustrate one of the worst trends in environmental management. They may create the illusion to executive management that all is well because the process is in place and has been certified. Management’s attention may therefore shift from improving environmental performance to merely completing a procedure and getting the box checked. Essentially, environmental concerns are reduced to the question, “Are we certified or not?” This narrow focus has also led to some companies focus on getting the box checked at the lowest cost and with greatest certainty by selectively picking external auditors. This issue was mentioned at The Auditing Roundtable meeting in January 2004, but it is something that has been of concern for several years.

For example, the U.S. Environmental Protection Agency (EPA) raised concerns over third-party auditing of ISO 14001, in a report published by the National Academy of Public Administration in 2001 entitled *Third-Party Auditing Of Environmental Management Systems: U.S. Registration Practices For ISO 14001* (<http://www.epa.gov/region3/ems/emspubs.htm#p>). This report made many important recommendations and concluded that “there remain unresolved issues, such as variations in interpretation and professional norms. These

deserve attention and improvement. Maintaining and enhancing credibility is another key concern as the registration system expands and evolves. Currently, third-party registration and auditing of EMS's are subject to conflicting and, in some cases, inappropriate expectations on the part of businesses, government agencies, environmental groups, the public, and sometimes even members of the registration and auditing community." Some managers consider that the certification audit will provide a "greenwash" of their environmental performance.

The misconception among management often comes down to their assumption that the goal of certification to ISO 14001 is to have the certificate hanging on the wall, and that once that is achieved there is nothing left to do. The reality is that ISO 14001 is the lowest common denominator – it is a consensus document agreed to by several hundred delegates from 74 Participating Members in TC207, which also includes 20 Observing Members and 54 Liaison Organisations. As such it is not something to reach up to; it is something on which to put the foot of the EMS coordinator in order to take the first step up the ladder of continual improvement (Figure 5). That continual improvement must include environmental performance of which compliance with regulatory requirements is one part.

The report *Environmental Management Systems: Do They Improve Performance?* (<http://www.epa.gov/EMS/volumeii.pdf>) drew some conclusions relating to environmental performance. It stated "These results provide the strongest support to date for the proposition that EMS adoption positively affects environmental performance over time and across a variety of environmental indicators and business sectors."

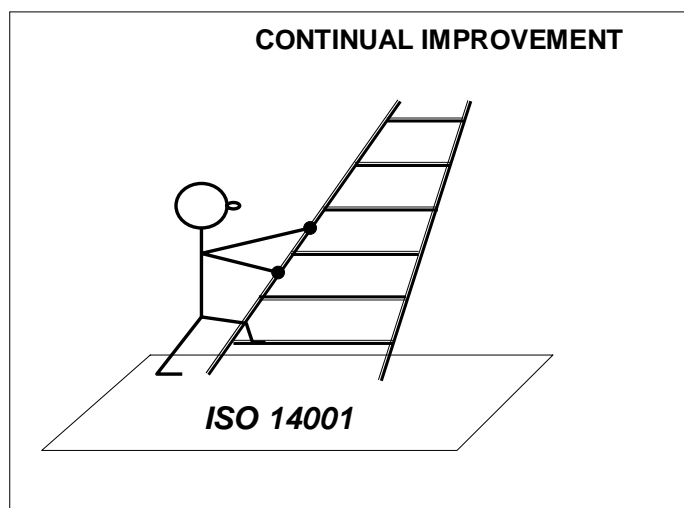


Figure 5. ISO 14001 and the ladder of continual improvement.

In the UK, “Remas” is a 3-year project designed to examine environmental management systems currently in place in business and industry across EU Member States. Remas aims to demonstrate that companies and organisations that implement an EMS show better environmental performance overall.

The Project has now recruited 441 sites across Europe. Any company can register and complete the online questionnaire, receiving a confidential benchmark report in return. This project may provide further clarification of the benefits of EMS.

International Trends

Supply Chain Management

ISO 14001 requires organisations to manage their aspects and impacts over which they have control, and over which they can be expected to have an influence. This has resulted in many industries and organisations requiring their suppliers and contractors (those over which they can be expected to have an influence) to demonstrate their environmental credentials.

For example, IBM required the 980 largest of their 10,000 suppliers around the world to be certified to ISO 14001. Leading by example, Ford, General Motors, DaimlerChrysler and Toyota have all insisted that their direct (Tier I) suppliers achieve ISO 14001 certification to continue to do business with them. Since purchased parts and materials account for over 60% of total vehicle value, suppliers are viewed as an extension of the auto manufacturer, which perceives that extended environmental leadership may be realised through the supply chain. Most affected direct suppliers were required to be certified to ISO 14001 no later than the end of 2003. Volvo Truck requires all of their suppliers and contractors to demonstrate environmental responsibility through completion of an extensive questionnaire; if they do not meet Volvo’s standards, they may not be used as a provider to Volvo, or they may have to be brought up to the required standard by an agreed date. Many other examples are available in the environmental literature.

This supply chain management has a ripple effect. For example, because IBM requires a Japanese electronics parts supplier to be certified to ISO 14001, that supplier may require its major suppliers to be certified also. This includes the power utility supplying electricity to the electronics manufacturer, who is buying coal from an Australian coal mine. We are now seeing the requirement for Australian mines supplying coal (and other commodities) to overseas customers to be certified to ISO 14001 as a prerequisite to doing business internationally.

Multinational companies have reported that third-party certification helped them to win substantial contracts with European and Japanese firms that look favorably upon ISO certification.

Demands By Foreign Ownership

The increasingly international character of businesses means that many organisations find themselves under foreign ownership, no matter where they are located in the world. The foreign owners typically find ISO 14001 to be an effective tool for managing their world-wide environmental operations, which they would otherwise view as an incomprehensible tangle of regulatory compliance requirements with no ties to corporate standards. Many multi-national corporations are developing corporate environmental standards that they require to be applied wherever in the world they operate, unless local regulatory standards are more stringent. In many cases, corporate standards require much higher environmental performance than local regulations.

Project Financing

It is a fact that financial institutions are reaching the stage of paranoia when it comes to environmental issues. This has arisen because of the bad public image associated with banks, insurance companies and international lending agencies that have financed environmentally damaging projects in the past. One Australian example was the demonstrations held outside the head office of the ANZ Bank in Melbourne some years ago in protest against the ANZ Bank providing finance to BHP, which at the time operated the Ok Tedi mine in Papua New Guinea. Even though the bank had no direct involvement in financing operations at Ok Tedi, the connection was made by the environmental movement.

For similar reasons worldwide, it is now common for financial institutions funding projects in all industry sectors to require the borrower to be, or become in an agreed time, certified to ISO 14001. They may go beyond this, and insist that the project, especially in developing countries, comply with the World Bank guidelines for that industry, and also be developed in accordance with the Equator Principles. Auditing against all of these requirements may be performed annually by independent auditors, with the report being made available to the company and to the host country government.

Regulatory Implications

The ISO 14001 standard states that it is not meant to increase regulatory burden on industry, and therefore it is not envisaged that it will be used as a regulatory mechanism. However, it is commonly used for this purpose, both in Australia and overseas. In Australia, environmental regulatory agencies do include ISO 14001 as a mandatory requirement in

some environmental licences in order to improve the environmental performance of organisations with poor environmental records.

In resource rich countries, especially developing nations, companies seeking to exploit those resources are carefully investigated with regard to their environmental track records in their home countries and others where they operate. If they have a corporate EMS in place, their chances of success in securing the rights to the resources are greatly increased. In addition, an EMS appears to be favourably considered by governments and other interested parties internationally, when it is presented as a management tool for minimising environmental risks identified in an environmental impact statement for a proposed project.

The **Environment Agency in the UK** considers legal compliance and good environmental performance to be fundamental. The Agency formally recognises Environmental Management Systems in its risk-based approach to regulation via the OPRA (Operator and Pollution Risk Appraisal) schemes. Government guidance to the Agency states that it should "take account of robust Environmental Management Systems, in particular the Eco-Management and Audit Scheme (EMAS) and ISO14001." It also says that the Agency's objectives "shall be to develop in conjunction with government a risk-based, proportionate, consistent, efficient and cost effective approach to the regulatory process". The Agency reviews all EMAS applications in England and Wales, and can prevent a company registering if it is not complying with environmental legislation. The Agency can have a company suspended from the EMAS register if it subsequently breaches legislation.

The **U.S. EPA** Administrator Christine Todd Whitman on May 15, 2002 issued guidance that the Agency looks favorably upon companies with EMS's. She has identified ISO 14001 as an EMS that produces reliable improvements in performance. In addition, a number of states have enacted or are proposing to enact environmental regulatory incentives for companies that have adopted EMS's such as ISO 14001.

The US EPA's overall policy on Environmental Management Systems states that, like the EMS approach itself, the EPA will be guided by the principles of continual improvement and learning, flexibility, and collaboration. It includes the following points:

- EPA will encourage wide spread use of EMS's across a range of organisations and settings, with particular emphasis on adoption of EMS's to achieve improved environmental performance and compliance, pollution prevention through source reduction, and continual improvement. EPA will support EMS's that are appropriate to the needs and characteristics of specific sectors and facilities.
- EPA will encourage organizations that use EMS's to obtain stakeholder input on matters relevant to the development and implementation of an EMS, and demonstrate accountability for the performance outcomes of their EMS's through

measurable objectives and targets. Additionally, EPA will encourage organisations to share information on the performance of their EMS's with the public and government agencies, and facilitate this process where practicable.

- EPA will encourage the use of recognized environmental management frameworks, such as the ISO 14001 standard, as a basis for designing and implementing EMS's that aim to achieve outcomes aligned with the Nation's environmental policy goals and the principles of the EPA's Position Statement.
- EPA will foster continual learning by supporting research and public dialogue on EMS's that help improve their understanding of circumstances where EMS's can advance the Nation's environmental policy goals. EPA will strive to collect better information on the application of EMS's, including how well EMS's meet environmental performance expectations; and the costs and benefits to organizations and the environment.

In the USA, a number of penalties resulting from prosecutions by the EPA have been negotiated to include a certified EMS to be developed within a nominated time period, and maintained into the future. The same has occurred in Australia, with the author being involved in one negotiation that removed the threat of a one million dollar fine by developing and implementing an EMS.

Financial Implications

An EMS can have significant financial benefits for some organisations, apart from mitigation of penalties in the event of a prosecution. One example is a coal mine in Australia that was required to establish a \$40 million financial bond with the government to ensure that the mine was properly closed on completion of mining. After certification of their EMS to ISO 14001, this Category 3 mine was raised to a Category 1, and the bond was reduced to \$14 million.

Industry Initiatives

The American **chemical industry** has spent 15 years developing its own code of conduct, Responsible Care®, which has been adopted by other chemical industry groups internationally. The rollout of Responsible Care® began 10 years before the advent of ISO 14001. Although Responsible Care® started as a program to avoid catastrophes like Bhopal, it gradually evolved and grew in scope to encompass other issues such as health and safety, product stewardship, and openness to the host community. By 1998, Responsible Care® had created an independent certification process of its own, known as Management Systems Verification (MSV).

Despite having accomplished so much with Responsible Care®, the chemical industry's customers, especially the automotive manufacturers, insisted that the chemical companies adopt ISO 14001 or lose their business. These customers essentially dismissed Responsible Care® and the MSV process as the functional equivalent of ISO 14001 certification. The customers had two chief objections. First, Responsible Care® is considered by some outside of the chemical industry to be a bundled collection of nebulous aspirations rather than a true management system in the classic "Plan-Do-Check-Act" tradition of the quality and EMS standards. Second, there were questions about the rigor of the MSV process, which was considered to be primarily an informal assessment of a company's Responsible Care® program by other industry members and community representatives, who lack independence and accreditation by an authorized, recognized body. The American Chemistry Council (ACC) therefore produced a creative solution to synergise the best of ISO 14001 and Responsible Care® to formulate a technical specification (RC-14001) for third-party dual certification to both standards, which was adopted in 2002.

While ISO 14001 focuses narrowly on environmental management and emphasizes rigor in certification, Responsible Care® additionally covers health, safety, community, customers, and communication. The chemical industry is hopeful that bringing the two standards together will create a rigorous, broad standard that can credibly yield outstanding performance.

The **Minerals Council of Australia** considers that the future of the Australian minerals industry is inseparable from the global pursuit of sustainable development. Through the integration of economic progress, responsible social development and effective environmental management, the industry is committed to contributing to the sustained growth and prosperity of current and future generations. To give practical effect to the industry's commitment to sustainable development, the Australian minerals industry released *Enduring Value – the Australian Minerals Industry Framework for Sustainable Development* at the “Inaugural Global Sustainable Development Conference” in Melbourne on 27 October 2004.

This framework provides a process for the Australian minerals industry to align with global industry initiatives, and in particular provides critical guidance on the International Council on Mining and Metals (ICMM) *Sustainable Development Framework Principles* and their application at the operational level. It builds on the Australian Minerals Industry *Code for Environmental Management* - the platform for industry's continual improvement in managing environmental issues since its introduction in 1996. It is also designed to provide a vehicle for industry differentiation and leadership, building reputational capital with the community, government and the finance and insurance sectors. The framework assists the industry to operate in a manner which is attuned to the expectations of the community, and which seeks to maximise the long-term benefits to society that can be achieved through the effective management of Australia's natural resources.

Enduring Value consists of 10 Principles, and while it does not directly refer to ISO 14001, it includes the broader concepts of sustainability and environmental management, and goes beyond these to encompass health and safety; ethical business practices and corporate governance; human rights; responsible product design, use and disposal; social, economic and institutional development of communities; and transparent reporting.

Conclusions

There is no doubt that ISO 14001 and EMAS are firmly established in the international community, as evidenced by the approximately 65,000 organisations certified as at October 2004. However, there have been genuine concerns expressed by researchers and practitioners regarding the effectiveness of EMS's to deliver positive improvements in environmental performance and regulatory compliance. Anecdotal evidence suggests that many organisations benefit from implementing an EMS, however the few studies that have been conducted in the UK, Europe and America raise significant doubts.

Currently, some industries are looking beyond certification of an EMS to ISO 14001 or EMAS, and have developed programs such as the chemical industry's "Responsible Care RC-14001" which incorporates ISO 14001, and the Australian Minerals Council's "Enduring Value" program. These incorporate health and safety, community consultation and other principles of good practice beyond the requirements of an EMS.

The implementation of the principles of sustainable development requires environmental management to be certain, through the establishment of environmental management systems. Global concerns at all levels of society have persuaded industry internationally to adopt the EMS as a core element in corporate governance. Overseas, more than in Australia, environment is integrated with health and safety, and EHS programs are part of corporate due diligence and compliance procedures.

Globally, EMS will continue to grow in importance. However, it will be necessary for the long-term continuation of EMS as a viable management tool for positive benefits to be demonstrated, including improved environmental performance and regulatory compliance, through surveys currently underway overseas and others in the future.