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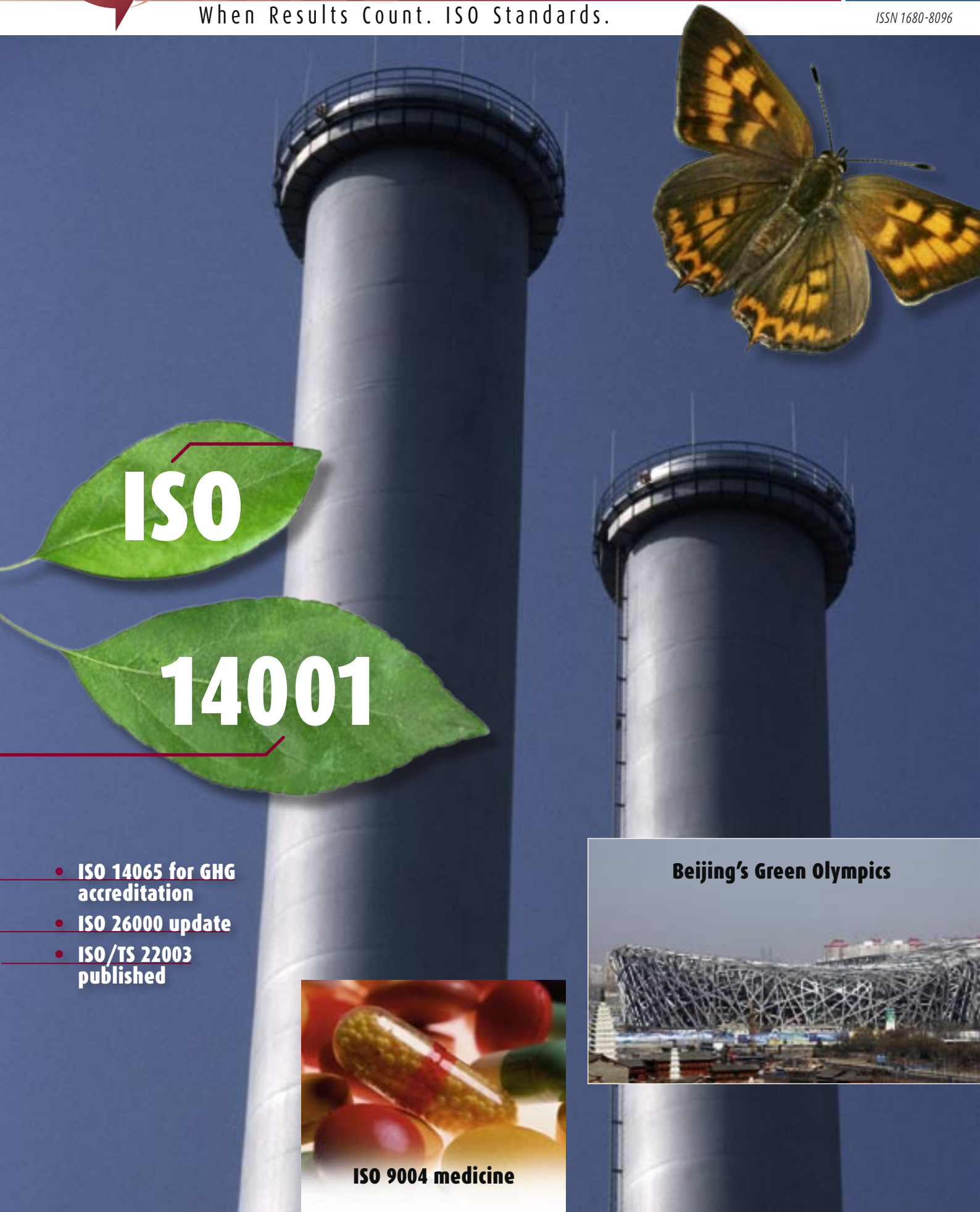

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by Roger Frost

Meetings with remarkable men and women

Standardizers would probably not figure very high in lists of charismatic people. As most of us like to feel that we are somehow special and unique, for many the whole idea of "standardization" smacks of drabness and uniformity.

And that's a pity, because once you get past a superficial negative reaction to the label, standardization and standardizers can take on a much more positive hue. Many of the qualities that we value, such as health, safety and care of the environment, depend on standardization to work out the details and to put them into practice.

As for standardizers, they appear in a more positive light when one realizes that their role has something of the good parent, teacher or guide in that they identify good practice or a solution to a problem and transmit this with the broad aim of helping to make the world, or at least a little bit of it, a better place.

And standardizers do indeed include some charismatic individuals. For example, being the head of an ISO technical committee or subcommittee can call for real skills of influence and diplomacy to get dozens of highly qualified men and women from very different cultural backgrounds to cooperate and move in the same direction.

After all, the experts that participate in these committees do not have take orders from their chair persons and secretaries. Of course, it helps when these experts have a shared vision or mission about why they have come together and what they are trying to achieve.

In the case of ISO/TC 207, Environmental management, *one would expect a strong sense mission given what's at stake: developing a globally relevant family of standards that give organizations of all types in public and private sectors practical tools for taking care of the environment while taking care of their customers.*

The potential influence of the ISO 14000 family is enormous, taking in not only environmental management, but also crucial issues such as climate change, environmental labeling and life cycle analysis.

The Special Report in this issue of ISO Management Systems *is dedicated to an overview of the impact of ISO 14001 in just over a decade in service. It includes perspectives from leaders of ISO/TC 207, among them Margaret Kerr, Chair from 1997 to 2001.*

A quotation from her article is included below because it underlines that the ISO 14000 family is the work of remarkable men and women from around the world.

Margaret Kerr writes: "It was a whirlwind four years of committee and subcommittee meetings and plenary sessions and during this time I had the opportunity to meet and work with so many talented and committed people from around the globe. I am very grateful to have had this opportunity.

The ultimate contribution of ISO/TC 207: **cultural understanding and appreciation of differences**

"During my four years, I not only observed great technical competence at work, but also people from over 80 countries coming together around a common goal, and in so doing achieving a level of cultural understanding and appreciation of differences that is perhaps the ultimate contribution of ISO/TC 207 to our world."

Margaret Kerr's remarks point to another quality of the ISO system: that fact that the development of ISO standards brings together very different people who nevertheless learn to work together to achieve a common good. In other words, beyond the actual standards being developed, the activity of international standardization is a force for peace.

Not bad for an activity and people thought to lack charisma.


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ISO

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ISO 14001 and ISO's complete offering for sustainable development

Photo: P. Krieger

by **Alan Bryden**,
ISO Secretary-General

Today, the environment is on the agenda of almost everyone – business, government and society at large.

The ISO 14001 standard is one of the principal tools being used by organizations everywhere to meet their environmental challenges, including by the world's major business corporations.

At the same time, even young children can grasp the rudiments of ISO 14001 and are keen to participate in environmental programmes such as:

- the Kids' ISO 14000 Programme, which is being rolled out in countries including Japan, Kuwait and the USA, and in
- the ISO 14001 programme being implemented by the Cambodian authorities to ensure the sustainability of the World Heritage temple sites of Angkor Wat.

ISO has **a multi-faceted approach** to the environment

Whereas the environment was once dismissed as a fringe concern, the world at large is now coming to embrace the concept of sustainable development as being the only rational development.

Sustainable development was placed on governmental and business agendas at the first "Earth Summit" – the United Nations Conference on Environment and Development, in Rio de Janeiro, in 1992.

With the encouragement of organizations such as the World Business Council for Sustainable Development (**www.wbcsd.org**), ISO had already begun preparing the ground by setting up the ISO/IEC Strategic Advisory Group on Environment (SAGE), set up in 1991, in which 20 countries, 11 international organizations and more than 100 environmental experts participated in defining the basic requirements of a new approach to environment-related standards.

Holistic

This work led to the launching in 1993 of ISO technical committee ISO/TC 207, *Environmental management*, to develop a holistic family of environmental management standards. Today, 73 countries participate in ISO/TC 207, along with another 25 as observers and 39 international or regional organizations, including the United Nations Conference on Trade and Development, the United Nationals Environmental Progamme, the World Health Organization and the World Trade Organization.

The relevance of ISO's approach was clear at the second "Earth Summit" – the UN's World Summit for Sustainable Development summit in Johannesburg, South Africa, in 2002. In the decade between the two summits, the debate had shifted from "what should we do?" and "why?" to "how do we do it?" ISO's area of expertise is precisely that – we develop the standards that provide the "how to do it".

So far, ISO/TC 207 has developed 23 International Standards or related documents. Of these, ISO 14001, which was first released in 1996, is the best known. It gives the requirements for environmental management systems (EMS).

An EMS is a management tool enabling an organization of any size or type to:

- identify and control the environmental impact of its activities, products or services;
- improve its environmental performance continually; and to
- implement a systematic approach to setting environmental objectives and targets, to achieving these and to demonstrating that they have been achieved.

Global economy

At the end of 2005, more than 111 000 certificates of conformity to ISO 14001 had been issued in 138 countries for environmental management systems operated by organizations large and small, in manufacturing and services, in public and private sectors. ISO 14001 is now thoroughly integrated with the global economy in roles such as the following:

- a unifying base for global businesses and supply chains;
- a technical support for regulation;
- a tool for major new economic players to increase their participation in global supply chains, in export trade and in business process outsourcing;
- a tool for regional integration – as shown by their adoption by new or potential members of the European Union;
- in the rise of services in the global economy – 31 % of ISO 14001 certificates in 2005 went to organizations in the service sectors; and
- in the transfer of good practice to developing countries and transition economies.

ISO International Standards constitute a toolbox not only for the environmental integrity of the planet, but also for economic growth and social equity – in other words, for all three dimensions of sustainable development.

ISO standards constitute a toolbox for all three dimensions of sustainable development

Other standards and guidelines in the ISO 14000 family address specific environmental aspects, including: environmental labeling, performance evaluation, life cycle analysis, communication and auditing.

The latest standards in the family are ISO 14064, which provides requirements for organizations or persons to quantify and verify greenhouse gas (GHG) emissions, and ISO 14065, which specifies accreditation requirements for organizations that validate or verify resulting GHG emission assertions or claims.

Claims made about reductions of the greenhouse gas emissions widely held responsible for climate change may have political and financial implications, in addition to environmental and technical ones. Ensuring their credibility is thus vital, for example in emissions trading schemes. Therefore, ISO has combined its environmental and conformity assessment expertise to develop ISO 14064 and ISO 14065.

The ISO 14000 family is the most visible part of ISO's work for the environment. However, ISO has in fact a multi-faceted approach to the environment.

ISO 14001 is now **thoroughly integrated** with the global economy

For example, it offers a wide-ranging portfolio of standardized sampling, testing and analytical methods for the monitoring of such aspects as the quality of air, water and soil. These standards are a means of providing business and government with scientifically valid data on the environmental effects of economic activity.

Other aspects of ISO's environment-related standardization work include the following:

- integrating environmental aspects in product design and development;
- treatment of waste;
- sustainability in building construction;
- quality of water supply and treatment services;
- energy efficiency and renewable sources, including nuclear and hydrogen; and
- new work on ship recycling.

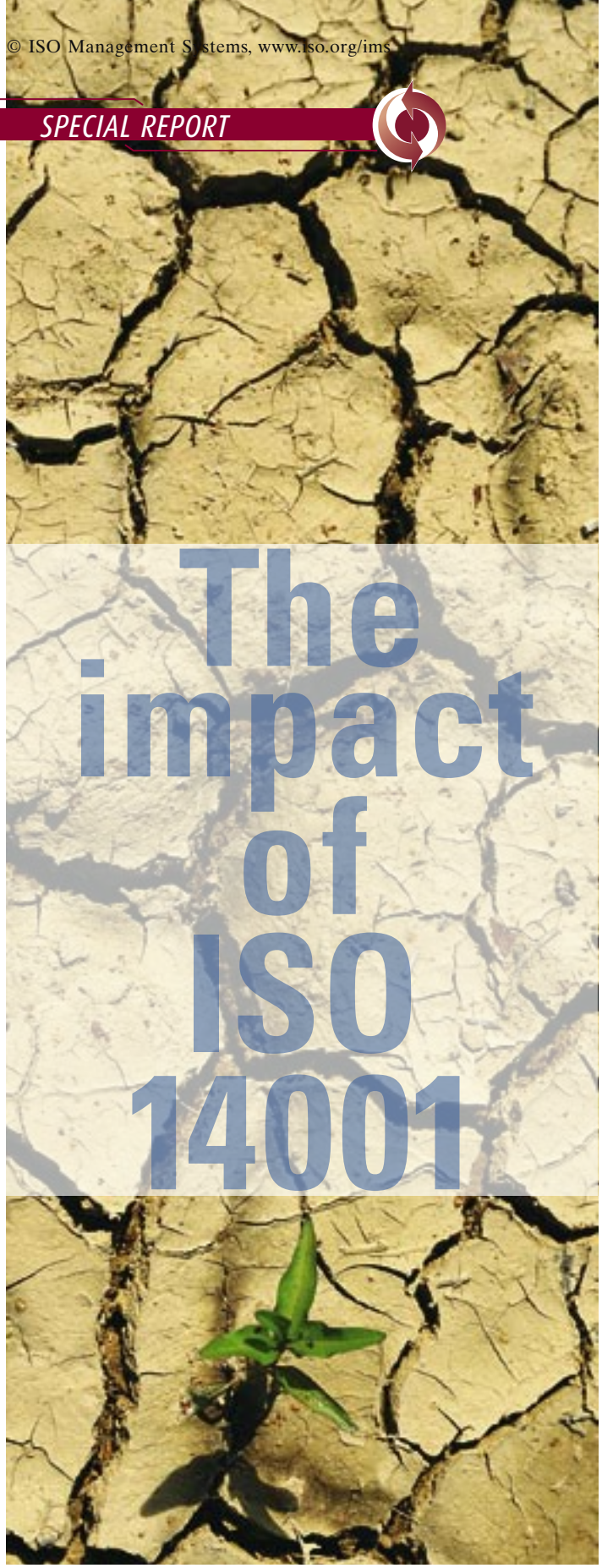
These examples show how ISO provides practical tools for meeting the environmental challenges facing the international community. However, taken as a whole, ISO's current portfolio of some 16 500 standards has much to offer for the economic and societal dimensions, in addition to the environmental one.

In the economic dimension, ISO standards for products, services, materials, systems and good practice promote efficiency and effectiveness, the facilitation of trade and the dissemination of new technologies.

In the societal dimension, we can cite the positive contribution of ISO standards relating to health, safety and security, the new work on social responsibility, and our development initiatives, such as the ISO Five-Year Action Plan for Developing Countries.

To sum up: as the positive effects – outlined in this article – of the implementation of ISO 14001 worldwide emerge, they demonstrate a widening realization by the global community of our collective responsibility for the environment.

In a decade, ISO 14001 has become a globally relevant tool for managing the environmental impact of human activities. At the same time, ISO International Standards as a whole constitute a toolbox not only for the environmental integrity of the planet, but also for economic growth and social equity – in other words, for all three dimensions of sustainable development. •



The impact of ISO 14001

ISO/TC 207 leaders share their perspectives

Launched by ISO in 1996, ISO 14001 has in just over a decade become the international benchmark for environmental management systems. To open this Special Report, the leaders of ISO technical committee ISO/TC 207, which is responsible for the ISO 14000 family, and of its subcommittee SC 1, which is directly responsible for ISO 14001, share their perspectives on the road ISO 14001 has traveled so far, as well as on how they see its future.

A powerful and trusted global brand

by **Dan Gagnier,** (left) Chair of ISO/TC 207 (since 2002) and **Ahmad Husseini,** Secretary of ISO/TC 207 (since 1998)

A little more than 10 years later and two editions of ISO 14001 under our belts – it's a good time to review the impact of ISO 14001 on the world to date, as well as the standard's future.

At the highest level, ISO 14001 has become a powerful and trusted global brand that represents environmental commitment at an organizational level.

Results and success stories from ISO 14001-certified organizations have built the ISO 14001 brand to the point where it is today – enjoying broad recognition around the world and holding considerable brand equity. Since the first version of the standard was published in 1996, ISO 14001 certifications worldwide had topped 111 000 by the end of 2005.

The most important impact of ISO 14001 on the world up to now is in the environmental performance improvements it has driven.

ISO 14001 requires organizations to assign roles and responsibilities, identify environmental impacts, set objectives and targets with the most significant environmental aspects in mind, and carry out a disciplined process of review and continual improvement. As a result, ISO 14001 has made organizations environmentally more aware and diligent in managing their environmental impacts and performance.

ISO 14001 has made organizations environmentally **more aware and diligent**

Further, while some have criticized ISO 14001 because it does not guarantee 100 % compliance to environmental regulations 100 % of the time, the simple truth is that ISO 14001 provides the framework to help companies achieve compliance with legal environmental requirements.

ISO 14001 has given organizations a type of "common currency" to help build their stakeholder relationships. For stakeholders such as regulators, customers, shareholders and the public, ISO 14001 certification has been used to demonstrate a commitment to responsible environmental management.

The use of ISO 14001 will continue to grow in the near future, based largely upon growth in so far under-served sectors such as healthcare and government agencies, and through the increased use of ISO 14001 across global supply chains.

Derive value

Coupled with the expected continued growth of ISO 14001 will be the need to ensure that ISO 14001-certified companies around the world continue to derive value from such certifications.

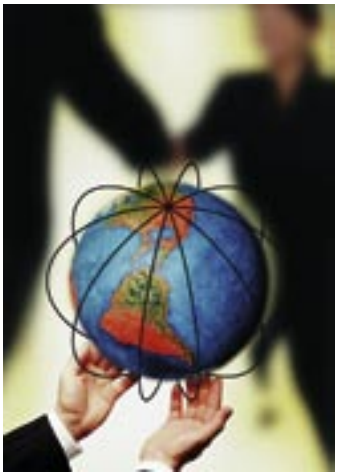
This is perhaps the most important challenge for all those involved with the standard – from standards writers to consultants, to certification bodies, to user organizations themselves. This need will only intensify as organizations' ISO 14001 systems mature and competitive pressures increase putting more pressure on organizational resources.

Integrated approaches to management systems offer **additional benefits**

To remain effective and relevant, standardization and standards' development processes need to meet the changing expectations, within industry, amongst regulatory authorities, from society and from multiple stakeholders.

ISO's challenge is to ensure that individual management system standards are compatible with increasingly integrated business models. Integrated approaches to management systems offer the following additional benefits:

- improved learning processes and shared learning across functions;
- reduction of risks;
- realization of efficiencies and synergies – less duplication of efforts including training, paperwork and administration and management;
- integrated internal and third-party (independent) auditing; and
- improved governance and organizational performance.



In response to these pressures, ISO 14001 and ISO 9001 (quality management systems) will need to become more closely aligned going forward so as to achieve efficiency gains and worldwide endorsement.

Work on aligning the two standards needs to continue. By 2012, we anticipate the new editions of both ISO 14001 and ISO 9001 will be more compatible, if not aligned. •

Real impact around the world

by **Oswald A. Dodds**, MBE, Chairman ISO/TC 207/SC 1 (since 1993)

It is hard to believe that ISO 14001 has already had its 10th birthday – but it is true!

Such anniversaries often trigger reflection on what has been and on what might happen in the future.

I well remember the first meeting of ISO/TC 207/SC 1, the subcommittee that is responsible for developing ISO 14001 and its "sister" document ISO 14004. It took place in Amsterdam in October 1993 and was my first ISO standards' development meeting and the first occasion that participants got to grips with the idea of creating an ISO standard on "environmental management".

What an occasion and looking back what a fascinating journey it has taken participants on. That said, who could have imagined how things have moved on since? I certainly didn't.

After many hours of debate – some might say argument – ISO 14001:1996 was finalised and published. Although it was well received and was immediately pounced upon by many organizations, it was not really understood by all.

In my view that situation still exists, although things are improving rapidly thanks to much hard work by the members of the subcommittee, national standards bodies and many others, especially those that use and therefore understand the document and its potential.

So what has been achieved since the standard was published? Well, it has become a best seller in many parts of the world – but needs to do more and better!

Certification numbers are impressive and climbing month by month with well over 111 000 certificates issued in 138 countries by the end of 2005. Incidentally, certification is not the only measure, but it is the only one that offers reasonable statistics that can be used with some certainty.

Legitimate options

It is said that many other organizations have implemented the standard and have self-declared their conformity, or been had this checked by a customer or other related body. All of these are legitimate options, but I know of no reliable data to support such approaches, which is a pity as usage figures may be much higher than certification survey figures currently show.

It is also evident that organizations adopt ISO 14001 for a variety of reasons – and rightly so. Reasons include:

- a desire to improve environmental performance;
- a desire to differentiate themselves form their competitors;
- the need to satisfy supply chain requirements or pressures;
- the need to satisfy customer (or potential customer) requirements;
- a desire to improve internal efficiency or business processes;
- a desire to better manage energy usage, reduce waste, save raw materials, etc.;
- a desire to involve those working for or on behalf of the organization; and
- a desire or need to improve relationships with regulatory bodies and/or neighbours

Usage may be much higher than certification survey figures currently show

The list could go on and will clearly vary depending on the organization, what it does, where it operates and the way it chooses to implement the standard.

Given the above, the publication and use of ISO 14001 has resulted in real impacts around the world. It is now becoming a talking point – not just for people like me involved in its development and for many others who are not.

Clearly, we still have a long way to go and much to achieve if we are to meet my personal goal of full penetration and use around the globe. Such high targets are achievable in my view, but will take much time, effort and energy and require different approaches in different countries and types of potential users if we are to succeed.

Phased approach

As part of ISO/TC 207/SC 1's efforts to make its products useful and useable by the widest possible range of organizations, it is currently developing a new guidance standard which will offer a phased approach to implementing an environmental management system.

The future ISO 14005 standard will give guidance on how to build an EMS in phases or pieces that build together into a system meeting the requirements of ISO 14001.

It is intended that the new document will be suitable for use by all types and sizes of organization, but is being written with the needs of small and medium-sized enterprises in particular in mind

It is also the case that the second edition of ISO 14001, published in November 2004, was the result of user feedback and this has helped shape the document into something that is much more visibly similar to ISO 9001 as we strive to make it easier for those organizations that wish to use both.

Other changes were made to make the requirements of the standard clearer and easier to understand and implement. The feedback which I have received thus far suggests that we have succeeded in our aims.

But what of the future ? Clearly, I hope that the achievements of the last 10 years can be built upon many times over. I also believe that the next revision of ISO 14001 will include content, layout and language improved even further.

Fully compatible

I also believe that it will take on board the moves by ISO towards a suite of fully compatible management system documents covering a more comprehensive range of management related tools and system components.

The next version will also accommodate developments in understanding and in the "science" of environmental management that have occurred since the standards were originally developed.

This will take time, energy and resources, all of which are in short supply. I am convinced that the members of SC 1 and the user community have those attributes in abundance and will rise to the challenge.

That said, I offer all those involved in the development of ISO 14001 my praise and thanks for their efforts and support thus far and in my anticipation of what is to come as we move forward. •

The early days of ISO/TC 207

by **George Connell**, Chair of ISO/TC 207 (1993-1996)

I was both surprised and honoured to be invited in 1993 to chair the newly established ISO/TC 207. I was at the time chairing Canada's National Round Table for the Environment and the Economy.

> The launch of ISO/TC 207 owed much to the preparatory work of **SAGE**

As the Round Table had taken responsibility for developing Canada's positions in advance of the 1992 Earth Summit, I was familiar with at least some of the issues and especially of the ideas that the World Business Council for Sustainable Development had formulated in advance of that meeting.

As I had been a university president for 13 years, I could claim some experience as a manager, but I had not had any briefing in depth on emerging ideas of management system standards.

I was fortunate, therefore, to be able to rely on the wisdom and experience of senior staff of the Canadian Standards Association (CSA): Jim Dixon (Secretary, 1996-1997), Ahmad Hussein and John Wolfe (Secretary, 1993-1994). I would also add to this list Reg Shaughnessy, who had provided outstanding leadership in development of the ISO 9000 standards for quality management.

The smooth launch of ISO/TC 207 in Toronto in June 1993 owed much to the brilliant preparatory work of SAGE, the Strategic Advisory Group on the Environment. SAGE had envisioned not only the broad mandate of ISO/TC 207, but also the six major tasks which would keep the technical committee fully and productively engaged for the following years.

Six tasks

The six tasks were the definition of standards for environmental management systems, environmental auditing, environmental labeling, environmental performance evaluation, life cycle assessment, and definition of terms.

At the time of the launch in Toronto, each of the six tasks was assigned to a different standing subcommittee. Delegates with the requisite experience and skills were appointed to the key positions of chair and secretary for the respective subcommittees.

Over the next years, the officers of those subcommittees provided leadership with truly remarkable inspiration and dedication. At each subcommittee meeting there would frequently be 80 or 90 delegates in attendance.

The chairs and secretaries somehow managed to maintain the forward momentum without constraining the rights of members to be heard

and to have their questions addressed. Firm leadership with a gentle touch was the key to progress.

There were four plenary sessions of ISO/TC 207 during my term in the chair. Following the launch in Toronto, the subsequent plenaries were held in Norway, Australia and Brazil.

By the time of the meeting in Rio de Janeiro in 1996, ISO/TC 207 had coalesced as a seasoned, imaginative and confident team. Our first complete and comprehensive set of environmental management standards was ready for the ultimate test in the wider world.

In the summer of 1996, I was invited to present the newly approved set of standards, the ISO 14000 series, to the ISO General Assembly, which that year took place in London, United Kingdom.

I did so with a great deal of pride and confidence, knowing that I was speaking with the unanimous support of the full membership of ISO/TC 207. To this day, I continue to be profoundly grateful to the entire ISO/TC 207 team for a monumental achievement.

I am also grateful that ISO/TC 207 has continued to flourish under the leadership of Margaret Kerr, Daniel Gagnier and Ahmad Husseini, and that the number of ISO 14001 certificates issued worldwide now exceeds 111 000. •

Unique position in the world

by **Margaret Kerr**,
Chair ISO/TC 207 (1997-2001)

I was pleased to join ISO/TC 207 as its second chair in 1997 by which time George Connell and his team had accomplished a lot during his four-year term.

In 1996, five environmental management system and auditing documents were published, followed in 1997 by ISO Guide 64, *Guide for the inclusion of environmental aspects in product standards*.

No other standards
have the potential influence
of the ISO 14000 family

It was an exciting achievement. This progress was a tribute to the commitment and hard work of ISO/TC 207's members. Nevertheless, when I assumed the chair, we realized that much remained to be done.

Certainly, the top priority during my term of office was the completion of the upcoming tools and standards on environmental labelling, life cycle assessment, and environmental performance evaluation.

We knew that these could have the ability to potentially impact trade and business activities worldwide, and so they needed to be carefully crafted.

Close cooperation between all of the subcommittees in areas where standards were overlapping or influencing each other was another area of focus – for example between life cycle assessment and environmental labelling, and between life cycle assessment and performance evaluation.

We were also very much aware of the unique position of ISO/TC 207 and the ISO 14000 standards in the world. No other standards, as far as I am aware, have the potential breadth of influence of the ISO 14000 family.

Range of topics

The range of topics covered by these standards – from environmental management systems to the labelling of products – means that nearly every organization, whatever its size, primary activity or location, will either use or be affected by them.

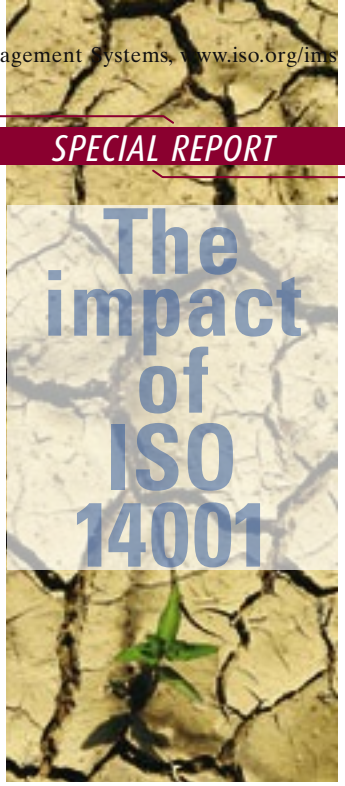
By considering implementation issues, we attempted to keep this knowledge front and centre, to ensure that the standards we generated would be used to their full potential.

Coming from a business background, I was familiar with the use of standards, but creating them and anticipating their impact was a new experience. I relied heavily on the "master of standards", Ahmad Husseini, and learned a great deal from him as well as the ISO/TC 207 subcommittee chairs.

The ultimate contribution
of ISO/TC 207
cultural understanding and appreciation of differences

It was a whirlwind four years of committee and subcommittee meetings and plenary sessions and during this time I had the opportunity to meet and work with so many talented and committed people from around the globe. I am very grateful to have had this opportunity.

During my four years, I not only observed great technical competence at work, but also people from over 80 countries coming together around a common goal, and in so doing achieving a level of cultural understanding and appreciation of differences that is perhaps the ultimate contribution of ISO/TC 207 to our world. •



A decade of ISO 14001

This article provides a round-up of ISO 14001 users illustrating the huge variety of these organizations, which are estimated to employ some 20 million people worldwide. It completes this picture by highlighting governmental and regulatory programmes to encourage ISO 14001 implementation.

by **Reinhard Peglau**
and **Martin Baxter**

Because an estimated 20 million people worldwide work in ISO 14001-certified organizations, the standard has enormous potential to diffuse good practice worldwide on environmental issues.

Since the first version of ISO 14001 was published just over a decade ago in 1996, the standard has been used as the model for more than 111 000 environmental management systems implemented in some 138 countries by organizations of all types in both business and public sectors.

In this article, we highlight a selection of users to illustrate the huge variety of organizations that implement ISO 14001 to address their environmental challenges.

The users are to be found in sectors as diverse as industry, government agencies, non-governmental organizations, financial institutions, hotels, shipping, farming and shopping malls, reflecting the universal application of this ISO standard.

Following this round-up, we list governmental and regulatory programmes in a number of countries to encourage use of ISO 14001.

Shared understanding

Whenever similar ideas are raised within the standardization world, using similar concepts but in different languages and expressed in different ways, the time is right for ISO to provide a forum aimed at worldwide agreement.

ISO thus provides an opportunity to develop shared understanding and a common approach in a universal language, irrespective of cultural, political and other differences.

This was the case in 1992-93 when the standardization bodies of Canada, France, Ireland, South Africa and the United Kingdom separately published standards for environmental management systems (EMS).

Responding at the international level, ISO in 1992 created a new technical committee on environmental management, ISO/TC 207.

In the same period, the Federal Environmental Minister of Germany and the National German Standards Institute (DIN) founded the German National Committee on "General Principles of Environmental Standardization (NAGUS)".

An estimated **20 million people worldwide** work in ISO 14001-certified organizations

In many other countries, national "mirror" committees to ISO/TC 207 were established, reflecting the formation of ISO/TC 207. In following years, meetings of ISO/TC 207 and its subcommittees took

place with up to 500 national experts from countries around the world, reflecting the huge interest in its work.

In October 1996, ISO/TC 207 reached unanimous agreement regarding the essential elements of a good EMS, and the ISO 14001:1996 standard, *Environmental management systems – Specification with guidance for use*, was born.

Below are highlights of milestones achieved by ISO 14001 and its users since the publication of the standard.

1996

★ A survey by SGS Yarsley of more than 500 companies in four European countries confirms what most environmental managers already know and government experts believe: long-term business security is cited by 83 % of the respondents as a key benefit of ISO 14001; compliance with legislation is named by 81 %; and improving market share by 80 % of respondents.

★ Germany's Federal Ministry for the Environment and the German-Singapore Environmental Technology Agency hold a seminar entitled "ISO 14000 and industry". The Singaporean Minister for Environment announces to 110 participants from throughout Asia that the national standards body, then the Productivity and Standards Board, will give financial and educational support to small and medium-sized enterprises to take them step by step through the requirements of ISO 14001. These companies can now apply for grants up to 70 % of consultancy costs.

★ The pulp and paper company PT Indah Kiat becomes the first Indonesian organization to receive ISO 14001 certification. Five months later, the Indonesian Environmental Impact Management Agency proudly announces that 45 Indonesian companies are already certified. But in December 1998 – when only 50 Indonesian companies have gained ISO 14001 certification – an official from the national Ministry of Trade and Industry warns his business community that, "If our companies fail to take this matter seriously, the country may find problems in increasing exports."

★ The Provincial Court of Alberta (Canada) fines a Canadian company approximately USD 70 000 for exceeding its allowed emissions of total reduced sulphur in contravention of its licence to operate. In addition to the fine, the court orders the company to achieve ISO 14001 certification by June 1998.

★ Read-Rite Corporation becomes the first company in Thailand (and the first in the global disk drive industry) to receive ISO 14001 certification. In recognition of its leadership in "solving the problems and managing the quality of the environment", Read-Rite is given Thailand's Prime Minister's Award for outstanding performance in environmental management.

*The **Uetlihof**, the biggest of Credit Suisse's buildings in Switzerland, where all the financial services company's locations were certified to ISO 14001 from 1997, prefiguring a global EMS campaign.*

The authors

***Reinhard Peglau** is Senior Scientific Officer on Environmental Management with the German Federal Environmental Agency (Umweltbundesamt), with specific responsibilities regarding the European Union's Eco-Management and Audit Scheme (EMAS). He has also closely followed the progress of the ISO 14000 series, particularly ISO 14001, and through an international network of contacts, maintains an "unofficial" data base of ISO 14001 certifications, and has contributed several articles to* ISO Management Systems *and its predecessor,* ISO 9000 + ISO 1400 News. *Reinhard Peglau is a member of the German delegation to ISO technical committee ISO/TC 207,* Environmental management.

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1997

★ The New Hampshire House of Representatives (USA) approves legislation authorising the state's Department of Environmental Services to accept ISO 14001 certification in place of some permits, licences, or inspection cycles. The move is perhaps somewhat too early, however, as some days later the Federal Environmental Protection Agency reports that it will withdraw flexibility from the states and carry out environmental law enforcement itself.

★ Credit Suisse, one of the world leaders in the financial services sector, demonstrates that ISO 14001 also applies to "white collar" organizations in sectors like banking, finance and insurance. All its Swiss locations are certified to the standard, to be followed in 2000 by the EMS of Credit Suisse and Winterthur (insurance) locations worldwide.

★ At the fifth annual series of meetings of ISO/TC 207 in Kyoto, Japan, some 500 delegates from 49 countries receive mixed information on the uptake of ISO 14001 certification around the globe. North America only has a few certified organizations, while in Asian countries certifications are rising very fast.

★ Japan's Ministry of International Trade and Industry (MITI) and the Japanese Environmental Agency host a seminar on ISO 14001 for local governments at which several towns and prefectures announce that they will strive for ISO 14001 certification. Ten years later, the introduction of strict pollution controls and the arrival of ISO 14001 in the public sector is credited for more than 500 local governments in Japan being certified and focussing significant effort on their public procurement policies. MITI, in cooperation with Keidanren, Japan's most powerful business association, begins promoting ISO 14001 to national industry, arguing that the benefits of the standard outweigh the costs of implementation.

IBM was one of the first global operators to adopt ISO 14001 to ensure that activities such as those at its semiconductor manufacturing facility in Essex Junction, Vermont, USA, which operates 24/7, are conducted in an environmentally responsible manner.

★ The Peruvian designer and manufacturer of telephone and power cables CEPER SA becomes the first company in Peru to be certified to ISO 14001, driven by exporters' increasing need to show a "green passport" to win business.

★ Asia Environmental Trading (AET) Ltd (UK) and the Regional Institute of Environmental Technology (RIET) in Singapore publish a detailed study entitled *Environmental Management in Asia – A guide to ISO 14000*. Based on case studies and interviews with top management, representatives from large multinationals as well as small and medium-sized enterprises and governments, the book provides valuable insights into corporate thinking and the future of EMS in Asia.

★ The Asian ISO 14000 Information Network (AIIN) is launched by China, Indonesia, Japan, Malaysia, The Philippines, Singapore, South Korea and Thailand with the intent of exchanging information on the implementation of ISO 14001.

*All ships operated by **Royal Caribbean Cruises Ltd.** sail with an environmental officer onboard to ensure ISO 14001 conformity.*

A Canadian provincial court **orders** a company found guilty of pollution to achieve ISO 14001 certification

★ IBM (USA) announces that it has received the first edition of a single worldwide ISO 14001 certificate covering all global manufacturing and hardware development operations. The company encourages suppliers to align EMS with the requirements of ISO 14001 and to pursue certification.

1998

★ At its annual meeting, the United Nations Commission on Sustainable Development discusses the role of ISO 14001 as a tool for industry's sustainable performance.

★ All Royal Caribbean ships begin sailing with an environmental officer aboard to ensure the conformity of the company's ISO 14001-certified EMS.

1999

★ Toyota (Japan) creates environmental procurement guidelines for its 450 overseas and domestic suppliers. The company urges all suppliers to gain ISO 14001 certification by 2003 and to issue annual progress reports.

***Saab,** of Sweden, was among the world's first automakers to require ISO 14001 certification of all suppliers.*

★ Ford Motor Company (USA) requires ISO 14001 certifications from its entire supply base, affecting more than 5 000 companies directly.

★ General Motors Corporation (USA) announces plans to implement a new environmental certification requirement for its suppliers. By the end of 2002, GM will require suppliers to be certified to ISO 14001.

★ Saab (Sweden) announces that by 2003 all suppliers must be ISO 14001 certified.

★ Laphroaig Distillery in Scotland becomes the first malt whisky distillery to be certified to ISO 14001.

★ The Dutch airline KLM achieves certification of its EMS and believes itself to be the first airline to do so. Benefits include reductions in noise, in-flight water consumption and use of toxic dry cleaning chemicals, 40 % of cabin paper recycling, improved wastewater quality and 1.6 million kilograms of fuel saved in a year.

2000

★ The Gas Utility Company becomes the first municipal company of the City of Aalborg, Denmark, to be certified to ISO 14001. This is significant because the city was the venue for the launching in 1994 of the sustainability principles embodied in the Aalborg Charter of the European Cities and Towns Towards Sustainability. As of February 2007, more than 2 500 European local authorities had signed the Charter.

Steeper take-offs reduce noise pollution for ISO 14001-certified KLM, whose environmental measures include recycling cabin paper.

★ The most comprehensive survey to date of ISO 14001 users is published by the German Federal Ministry for the Environment and the German Federal Environmental Agency – 565 certified organizations and 17 certification bodies are respondents. German certified organizations award ISO 14001 a "good-to-satisfactory" mark, and 83 % state that they intend to continue with certification. The main benefits found by the users are improved organization and documentation, and greater legal security. The most cited disappointment is lack of recognition (image).

Beginning with the Gas Utility Company, several municipal companies are now ISO 14001 certified in the City of Aalborg, Denmark. The city is famous as the venue for the launching of a sustainability charter to which 2 500 European local authorities now adhere.

Laphroaig Distillery in Scotland became the first malt whisky distillery to develop a taste for ISO 14001.

★ The USAID (United States Agency for International Development) funded project Industrial Initiatives for a Sustainable Environment (IISE), working with Philippine Government agencies and private

companies to bring down the cost of certification and help more companies establish an environmental management system, informs Philippine firms that they will need ISO 14001 to retain market access. The programme has the overall aim of pushing the issue of environmental management systems towards the textile, apparel, chemical, electronics and automotive sectors.

★ Cadiz establishes itself as a public sector pioneer in Spain in the use of ISO 14001 to manage and improve its tourist assets. Two of its beaches were first in Spain to be awarded ISO 14001 certification.

*Tourists visiting **Cadiz**, Spain, can enjoy beaches operated according to ISO 14001-certified EMS.*

★ The President of the United States directs federal agencies to implement EMS at all appropriate agency facilities, through an Executive Order entitled "Greening the Government through Leadership in Environmental Management". (In 2007, the Bush administration revokes several environmental management initiatives for greening the US government.) President George W. Bush announces with his executive order that environmental management systems must remain the primary approach for agencies to establish objectives and targets, conduct their operations and activities, and report on performance under the executive order. Several governments worldwide had previously announced the importance of "green government by the use of EMS". For example, at the G-7 Environmental Ministers meeting in Canada in 1995 the ministers agreed to improve the environmental performance of governments and in France (1997), the Netherlands (1998) and Norway (1998) national action plans towards integrating environmental considerations into government decision-making had been announced.

★ The Kids' ISO 14000 Programme is launched in Japan. Within the first three years, some 50 000 school children will participate, learning how to apply the ISO 14001 operating principles of Plan-Do-Check-Act to reduce energy and water consumption and production of domestic rubbish. In 2002 and 2003, ISO signs

*ISO Secretary-General **Alan Bryden** (left) and ArTech President Prof. **Takaya Kawabe** at the signing in Tokyo of an agreement reinforcing ISO's support for The Kids' ISO 14000 Programme.*

memoranda of understanding with the programme's operators, the Japanese NGO ArTech, to lend its name to the programme and to promote it through its network of national member bodies.

★ Swiss Re, one of the world's largest reinsurers, achieves the certification of its logistics and guest services departments at its head office in Zurich, Switzerland. Certification to the ISO 9001 quality management standard is achieved at the same time.

*The Zurich, Switzerland, head office of **Swiss Re**, where the company's ISO 14001 certification campaign began.*

*The **Shangri-La-Hotel Group** has received ISO 14001 certification for 21 locations throughout Asia.*

2001

★ The Korea Trade-Investment Promotion Agency in Seoul approaches local car parts manufacturers, informing them that they must pay more attention to international environmental standards or risk losing access to the US market, stressing that it is imperative that Korean companies obtain ISO 14001 certification.

★ The Shangri-La's Tanjung Aru Resort, Shangri-La's Rasa Ria Resort and Dalit Bay Golf and Country Club make history in Sabah – the second largest state in Malaysia – when they become the first hotels in the area to be certified to ISO 14001. In 2006 the Shangri-La-Hotel Group will announce that 21 of its locations throughout Asia have received an ISO 14001 certificate.

*The Mall at **Cribbs Causeway**, near Bristol in the United Kingdom, is one of several large shopping facilities to receive ISO 14001 certification in recent years.*

★ ÆON Malls Co. Ltd. (Japan) achieves ISO 14001 certification across all sites, initiating a trend toward certification for large retail operators. ÆON aims to reduce its overall environmental footprint by reducing impacts from each shopping centre while increasing the value of services and comforts provided to customers. (Further ISO 14001 certified shopping malls now include Bluewater and The Mall at Cribbs Causeway, both in the United Kingdom).

*ISO 14001-certified "holidays on the farm" are offered in **South Tyrol**, Italy.*

★ A series of events is staged in the beautiful Gsieser Valley, South Tyrol, Italy, to create greater environmental sensitivity among upland farmers. Eventually, 13 of them will be able to offer ISO 14001-certified "holidays on the farm", combining protection for the mountain environment while encouraging tourism.

2002

★ An environmental clause is written into new railyard contracts in Italy worth over EUR 15 million, calling for the implementation of several ISO 14001 requirements. Italferr, the major Italian engineering company, progressively requires contractors to implement ISO 14001 on a selective basis, but not necessarily to seek certification. This experience shows how the implementation and maintenance of an effective EMS can take precedence over certification.

*Major railway contracts in **Italy** are carried out according to ISO 14001 requirements – although certification is not necessarily required.*

2003

✶ Gros Morne National Park (Canada) designated a UNESCO World Heritage Site in 1987 for its exceptional universal value, protects thousands of square kilometres of extraordinary landscape on Newfoundland's west coast. Concerned about pressure on the ecosystem, Parks Canada revises its Request for Proposal process, making certification to ISO 14001 mandatory for companies seeking to operate concessions within the Park. In response, Norock Associates Ltd, operator of the Western Brook Pond Boat Tour, becomes the first boat tour company in North America to be certified.

There has been a clear shift in the profile of users of EMS since the 1990s

✶ The Cambodian Government's APSARA authority – protector of the Archaeological Park of Angkor – embarks on an ISO 14001 implementation programme (achieving certification in 2006) involving its own management and staff, provincial authorities, local police, park vendors, monks, villagers and schoolchildren. Registered on the World Heritage List, Angkor is famous for 12th and 13th century temples including Angkor Wat and Bayon.

*The **Archaeological Park of Angkor** in Cambodia began its ISO 14001 certification programme in 2003 and achieved certification in 2006.*

2004

✶ The US Multi-State Working Group (MSWG) on Environmental Performance, a coalition of state regulators and other groups, publishes guidance on achieving compliance with environmental laws and regulations and help towards demonstrating transparency on public reporting on business behaviour. Entitled, *External Value Environmental Management System Voluntary Guidance – Gaining Value by Addressing Stakeholder Needs*, the document includes recognition that ISO 14001 certified companies are not assured by external certification bodies that they are in compliance with legislation, and that certification does guarantee confidence of external stakeholders.

*ISO 14001 helps **Chester Zoo** in the United Kingdom improve monitoring and legal compliance while reducing waste, energy consumption and operating costs.*

✶ Chester Zoo becomes the first in the United Kingdom to be awarded ISO 14001 certification. Administrators identify direct benefits including improved performance and monitoring, legal compliance, reduced waste and energy use and lower operating costs. By 2007, about 10 zoos in China, Denmark, New Zealand, Portugal and the United Kingdom are certified.

✶ The Governate of Qena, in the Nile Valley, Egypt, becomes the first Arab city to achieve ISO 14001 certification, part of a

*The **Cedi abd Elreheem Alqenawy Mosque** in Qena, a token of the city's Islamic and Arabic heritage, was renovated as part of its environmental and economic development programme, which included ISO 14001 implementation and certification.*

programme that in addition to the environment, addresses social aspects including the empowerment of women, eradication of illiteracy and the care of homeless children.

2005

✶ Not only smokestack industries pollute – universities do too. So the Nishi-Chiba Campus in Chiba, Japan, set about reducing the environmental impact of chemical waste from laboratory experiments, plus waste and energy use from everyday campus life, by implementing an ISO 14001 EMS, which achieves certification in January 2005.

Members of the ISO 14001 Student Committee at Chiba University play an important role in in EMS implementation and dissemination.

✶ Nippon Television Network Corporation is certified to ISO 14001, a first for commercial broadcasters in Tokyo, although Ulster Television PLC in Northern Ireland has held certification to ISO 14001 since the late 1990s.

✶ The Port of Houston (PHA), Texas, the world's 10th largest, which in 2002 became the first in the USA to attain ISO 14001:1996 certification, updates its certification to the ISO 14001:2004 versions. The PHA, which generates USD 65.9 billion a year in foreign trade, demonstrates how business is compatible with programmes to reduce pollution, improve water quality and conserve energy.

2006

✶ More than 600 environmental professionals in the United Kingdom respond to a survey on EMS carried out jointly by the Environmental Data Services (ENDS), the Institute of Environmental Management and Assessment (IEMA), the Environment Agency and the United Kingdom Accreditation Service (UKAS). The majority of respondents say EMS delivers worthwhile and sustained benefits to organisations, going beyond those that would have been achieved by other drivers. Three quarters of respondents believe that implementing an EMS increases the frequency and scope of checks that an organization makes to test whether it is in legal compliance. All respondents say EMS improve understanding of the organization's legal status.

✶ The 2006 Winter Olympic Games in Turin, Italy, take place with the support of an ISO 14001-certified environmental management system to improve the environmental aspects of the event and to coordinate with the many different entities with an impact on the environmental footprint of the Games.

✶ In recent years there has been a trend for multiple certifications to various standards by organizations that wish to demonstrate their commitment to meeting the needs of diverse stakeholders. In 2006, the French conurbation of Bourges Plus, which groups 14 local government units serving 100 000 inhabitants, achieves quadruple simultaneous certification for the quality, safety, environmental (ISO 14001) and ethical (QSEE) facets of its sustainable development programme.

*The **Port of Houston**, Texas, USA, is the world's 10th largest and was the first US port to attain ISO 14001 certification.*

*The organizers of the **2006 Winter Olympics** in Turin, Italy, looked for ISO 14001 certification in the selection of many suppliers to the event.*

Incentives for ISO 14001 certification

Governments around the word have adopted a wide range of incentives to encourage ISO 14001 certification:

Austria: The Federal Ministry of Agriculture, Forestry, Environment and Water Management has issued a questionnaire for potential contractors which includes questions on the use of ISO 14001.

Czech Republic: The new Law on Public Procurement (No. 137/2006) allows purchasers to make certification to ISO 14001 a requirement.

Egypt: The Egyptian Ministry of Trade and Industry, through

its Industry Modernization Program I.M.P.(a joint program funded by the EU and Egypt), encourages companies to implement ISO14001 by paying 85 % of the cost of consultancy and certification. During the last three years (2004, 2005, 2006), some 200 companies have benefited from this project for ISO 14001 certification.

France: Beginning in mid 2008, industrial sites operating environmental management systems certified under ISO 14001 will be subject to inspections by outside inspectors every 10 years, rather than the 5-year standard to be applied to non-certified sites.

Germany: In Saxony, under the relevant procurement legislation, ISO 14001 companies are favoured in public procurement processes.

Italy: A law regarding conservation of water resources sets out provisions for public procurement processes. For construction of industrial water networks, ISO 14001 certified companies are given preferential treatment.

Netherlands: Shorter processing time for new licenses and less frequent visits by enforcement officers.

Norway: The Norwegian Pollution Control Authority has instructed regional environmental authorities to reduce the frequency of inspections.

Spain: Services produced by ISO 14001 companies are favoured within the public procurement process and in service contracts.

Thailand: ISO14001 certified companies are exempted from paying annual manufacturing licence fees to the ministry of industry for five years.

The future challenge will be how well ISO 14001 users deal with climate change, resource use, biodiversity loss and legal compliance

Evolution and future challenges

There has been a clear shift in the profile of users of EMS since the 1990s. Typically, the early adopters of the standard were in the heavy industry and manufacturing sectors – companies that had large-scale environmental impacts and experience of using standards in management.

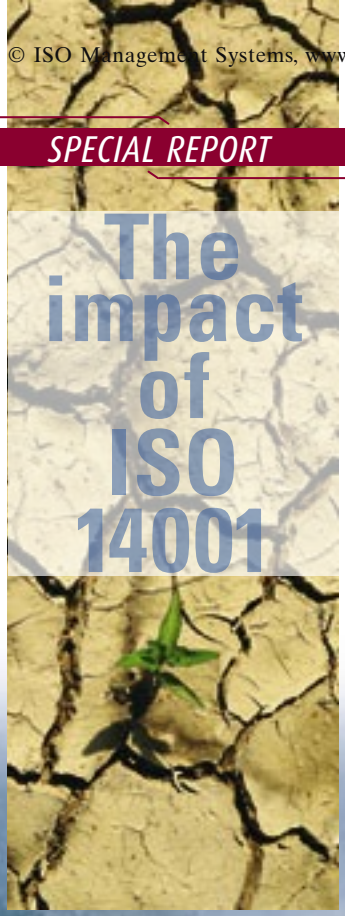
However, as environmental issues have increased in importance, organizations in the service and support sectors have adopted EMS as well. The spectrum of EMS users has broadened to areas including zoos, farming, schools and universities, military services, media, ships and airlines.

ISO 14001 certification now reaches cruise ship companies, marine transportation services, container carriers and leading ship classification societies. Almost all airlines and airports can be expected to be certified within the next ten years. Recreation, holidays, browsing in shopping malls. More and more small- and medium-sized enterprises are discovering the benefits of certification. The myth that ISO 14001 is difficult to implement for small business is de-bunked by the fact that more than 200 German chimney sweeps are certified.

The number of EMS users will continue to grow, particularly as ISO 14001 penetrates more effectively into supply chains. The real challenge in the future, however, will be how well the ISO 14001 participants deal with the most compelling environmental threats – climate change, resource use, biodiversity loss and legal compliance.

For ISO 14001 to maintain its international currency as a force for environmental protection, it will need to demonstrate that it is able to support action on these areas and remain an effective tool for sustainable consumption and production. ✶

Master chimney sweep Reiner Raeder, on a rooftop in the German capital of Berlin, helps to de-bunk the myth that ISO 14001 is too difficult for small businesses – according to the local sweep's trade association to which he belongs, the Schornsteinfeger-Innung, all its members are ISO 14001-certified.



ISO 14001 in retrospective and perspective

In just over a decade, ISO 14001 has emerged as the international benchmark standard for environmental management among large and small companies, public authorities and nongovernmental organizations alike. This article examines its impact on different areas such as management and the public sector, and looks at future trends.

by **Alexander Moutchnik**

First published as an International Standard in 1996, ISO 14001 is now in everyday use around the world. One indication are the 111 162 certificates of conformity to the standard issued by the end of 2005 according to *The ISO Survey*.

Like the ISO 9001 standard for quality management systems, implementation of an ISO 14001-based environmental management system (EMS) represents a strategic decision by an organization.

The impact of ISO 14001 on management, environmental performance and on other management standards is best evaluated over the long term.

The body of experience collected over the last decade from organizations of all types and sizes enables us to predict future trends in standardization of environmental management systems.

Impact on top management

A primary reason why ISO 14001 is so widely used lies in its ability to provide organizations with methodologies and solutions to handle both internal and external environmental risks. The standard reflects the crucial transformation of environmental management systems during recent years.

Before the first version of ISO 14001 was released – following a lengthy development process within ISO technical committee ISO/TC 207, *Environmental management*, environmental issues generated little top management attention in most organizations. Only certain parts of operating activities were considered environmentally relevant and specialists generally handled the limited regulatory requirements.

The impact of ISO 14001 is best evaluated over the long term

However, with increased public concern from the 1970s on over pollution and the adoption of wide-ranging environmental laws and strict regulation, the environmental management of organizations changed dramatically.

To comply with legal requirements, organizations began to optimise their production facilities through implementation of best available technical solutions and innovations. Nearly every process and function has become relevant for assessing overall environmental impact.

The need to respond to legislative pressure, to increasing competition in local and global markets and to growing customer requirements led to the development of specific environmental competence within the various departments of an organization, including accounting, marketing and controller functions.

By the beginning of the 1990s, organizations had realised that improvement in legal compliance and in broader environmental performance could be achieved not only through technical means, but also through a thoughtful, goal-oriented and standardized approach. This realisation raised environmental matters to the level of top management.

ISO 14001 emphasises the key role of top management for the success of the EMS. The standard requires leaders to define the organization's environmental policy, to appoint specific management representatives and to undertake regular evaluation of the EMS based on internal audits.

Plan–Do–Check–Act

ISO 14001 emphasises the general importance of environmental management for corporations not only through revision the duties of decision-makers, but also through the introduction of the management methodology known as Plan–Do–Check–Act (PDCA).

This methodology describes an ongoing, iterative process that enables an organization to establish, implement and maintain its policy based on top management's leadership. One of the key messages of ISO 14001 is that the EMS should not be handled in a vacuum, but in the same manner as other processes in the corporation.

*The **Plan-Do-Check-Act cycle** which is the operating principle of ISO 14001 has even proved to be within the reach of school children.*

The PDCA approach has became the basis of ISO 14001 compliance largely because it can be applied to all processes. However, this feature is frequently misunderstood within organizations, and the PDCA approach is too often applied only for environmental management. But when the value of PDCA principles are recognised through their application in ISO 14001, the result can be an impetus for the general reorganization of corporate management.

Thus, ISO 14001 standard has helped organizations understand that the effectiveness of an EMS depends on the quality of overall management. Improvements in one system are deeply co-related with improvements in others.

Management controls

The benefits of the ISO 14001 standard include additional external and internal controls over environmental competence management.

ISO 14001 provides regulators with confidence that an organization maintains procedures to identify all applicable legal requirements. Stakeholders are assured that the certified organization has formulated its environmental policy, goals and objectives, and maintains procedures for receiving, documenting and responding to relevant communications from external parties.

Implementation of an EMS is often required by organizations in banking, financial and commercial sectors, and sustainability rating agencies, governmental authorities and other institutions.

IBM was one of the first multinationals to adopt ISO 14001. IBM's environmental management system includes the handling of air emissions, waste water discharges, hazardous and solid waste, energy usage, chemical usage and groundwater remediation.

The emergence of these requirements has motivated many organizations to implement ISO 14001, leading to certain modifications in the voluntary character of the standard.

In recent years, the standardization of management systems has effectively become an obligatory market requirement. An example of this is the American Chemistry Council's (ACC) Responsible Care initiative from 1998, specifying comprehensive environmental, health, safety and security (EHS&S) performance improvement.

ISO 14001 emphasises the key role of top management

Participation in the Responsible Care initiative is mandatory for members of the ACC and is connected to a mandatory certification of a company's Responsible Care management system by an independent, accredited auditing firm. These firms audit headquarters and chemical facilities to assure that every chemical company has in place a framework to achieve performance and verify results.

All Responsible Care companies must obtain initial certification by 31 December 2007. Thereafter, certification must be renewed every three years. A new cycle of certification audits begins in 2008. Companies may choose from two certification options:

- either to undertake a Responsible Care Management System (RCMS) certification, which verifies a company has implemented a system that functions according to professional standards,
- or a RC14001 certification, which combines RCMS and ISO 14001 into a single, more cost-effective audit process.

This shows how ISO 14001 has enriched industry-specific regulatory frameworks and made them, on the one hand, effective instruments of *external* control over management.

On the other hand, the implementation of ISO 14001 in all affiliates and production sites of a multinational corporation provides top management with an additional instrument of *internal* control over the activity and environmental competence of lower management in the affiliates.

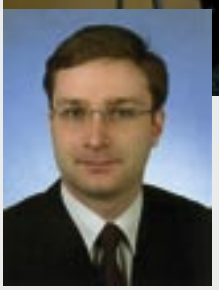
An unknown number has implemented ISO 14001 without certification

In many cases, large multinationals require their suppliers to implement ISO 14001-based EMS. Frequently, they also provide technical assistance and consulting services through their affiliates to local suppliers encouraging them to seek ISO 14001 certification or to apply environmental practices similar to those of the parent corporation.

In this way, ISO 14001 has become a precondition for local companies in emerging economies to win contracts as suppliers to multinationals. For instance, in April 1998, IBM's Global Procurement Department sent a letter to over 900 suppliers encouraging each of them to align their EMS with ISO 14001 and to pursue certification.

In 1999, Toyota created environmental procurement guidelines for its 450 overseas and

The author



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domestic suppliers, urged its suppliers to gain ISO 14001 certification by December 2004 and to issue annual progress reports.

In November 1999, Ford Motor Company announced that it would require all of its suppliers – over 5 000 manufacturing facilities worldwide – to meet ISO 14001 requirements by the end of 2004. Many of these programmes have been realized and thus improved the general acceptance of the ISO 14001.

Impact of certification

Certification is not a requirement of ISO 14001, which can be implemented solely for the external and internal benefits it provides. However, the advent of ISO 14001 has led to the creation of a number of organizations accredited to carry out EMS audits and certification. Over the last decade, several types of certification bodies have developed, including:

- large multinational firms which have been pioneers in the field of corporate management auditing, usually working with global companies, and offering certification to various references, of which ISO 14001 is one;
- small companies focused solely on ISO 14001;
- companies that also provide consulting or training in addition to certification; and
- auditing bodies belonging to public administrations or other governmental authorities such as environment ministries.

The development of ISO 14001 certification reflects the evolution of the standard's implementation, from multinational corporations, mainly in manufacturing, to small- and medium-sized companies and to service providers, including governmental bodies at local and national levels.

The precise number of certificates issued worldwide is not known, because there is no central database of ISO 14001 certifications. The only available information can be taken from *The ISO Survey*, carried out annually by ISO, and from the statistics which are collected by Dr. Reinhard Peglau and his colleagues of the German Federal Environment Agency.

The available data comes from disparate sources and this gives rise to variations in the quality and quantity. In addition to that, no organization with a certified management system is obliged to report to ISO or any other central organization about its ISO 14001 certificate.

Moreover, the total of certificate changes daily due to the issue of new certificates, to the expiration of old certificates, to the switch from single-site certificates to single, multiple-site certificates, or to the transfer to sector specific management system standards like Responsible Care, or to the Eco-Management and Audit Scheme of the European Union (EMAS), which includes since its second revision in 2001 the entire requirements of ISO 14001.

> Awareness of ISO 14001 **has increased dramatically** in recent years

In view of these difficulties, *The ISO Survey* mentions in its introduction that it has never pretended to academic rigour in its compilation, to scientific accuracy in its results, nor to being exhaustive, and advises a degree of caution in interpreting its results.

Nevertheless, a number of scientific research papers have based their assumptions on this data. Despite its limitations, *The ISO Survey* provides a unique indicator of the worldwide diffusion of ISO 14001 certificates. However, it concerns only those organizations that have undergone a third-party (independent) audit and does not show the number of

organizations that may implement ISO 14001 without seeking certification.

An unknown number of organizations – most probably small and medium-sized companies – has implemented the standard without seeking certification through making either a self-declaration of their conformity, or demonstrating to their customers that their EMS meets the requirements of ISO 14001.

Impact on public sector

Organizations with certified environmental management systems achieve the full benefit of ISO 14001 certification only if stakeholders are familiar with the content and purpose of the standard. Awareness of ISO 14001 has increased dramatically in recent years – not least due to the increasing politicization of the standard.

Public sector and governmental organizations at all levels, including regulatory bodies, have gained experience of the standard by implementing it in their office, department, ministry or region.

A well-implemented EMS, supported by other related management tools, can help companies and organizations to:

- identify and reduce risk;
- achieve compliance with regulations;
- increase overall efficiency and accountability;
- reduce operational costs and potential liability;
- enhance employee morale and community relations; and
- achieve environmental performance goals.

***Ian Pearson**, the United Kingdom's Minister of State for Climate Change and Environment, gave the keynote speech at the BSI awards ceremony in November 2006 to celebrate the 10th anniversary of ISO 14001, illustrating the political importance that the standard has attained.*

For example, in efforts to increase the impact of environmental policies, various government departments in the United States and the United Kingdom have sought or are seeking ISO 14001 certification.

The US National Technology Transfer and Advancement Act, adopted in 1996, requires federal agencies to use International Standards where they exist instead of creating their own. This applies to ISO 14001 and its diffusion in US federal agencies.

In 2000, EMS implementation was incorporated into presidential Executive Order 13148, "Greening the Government through Leadership in Environmental Management", which required all major federal facilities to develop and implement an EMS by December 2005.

Although the order did not specify ISO 14001, the standard was the most readily recognizable model and the order included all of the desired elements outlined in ISO 14001. To date, nearly 200 federal facilities have environmental management systems in place – with many more developing agency policies, training, and EMS implementation tools.

The Environmental Protection Agency, Department of Defense, the National Aeronautics and Space Administration, and others are developing resources that other agencies can use to implement EMS.

> The revision of ISO 14001 **improved** readability and understanding

The Defense Logistics Agency (DLA) plan included a formal commitment to implementing ISO 14001 based EMS at all 154 DLA appropriate facilities. US Marine Corps policy requires all its installations and those of Marine Forces Reserve to fully conform to its EMS by 31 December 2007.

The 13 July 2001 Army EMS Action Memorandum requires all appropriate Army facilities to implement a mission-

focused, ISO 14001-conforming EMS by Fiscal Year 2009.

One of the main impacts of ISO 14001 is the active involvement of political institutions and organizations in the implementation and certification of their environmental management systems.

In 2002, the US White House Office of Management and Budget revised its budget guidelines to include provisions for EMS implementation. As a result, ISO 14001 is now treated not only as a business issue, but also as an issue of national and international policy.

The growing political profile of ISO 14001 can be illustrated by an example from the United Kingdom. The British Standards Institution (BSI – **www.bsi-global.com**) organized an awards ceremony in November 2006 to celebrate the 10th anniversary of ISO 14001, which was organized in November 2006 by the British Standards Institution in Westminster.

It was supported by the Department of Trade and Industry, the Department for Environment Food and Rural Affairs, the Environment Agency and the Institute of Environmental Management and Assessment, while the keynote address was delivered by Ian Pearson, the Minister of State for Climate Change and Environment.

The same month in the United Kingdom, in a speech to the Sustainable Development Business Summit, Mr. Pearson said that with published evidence confirming the effectiveness of EMS, he would like to see many more organisations adopting them.

Impact on communication

In general, standards contribute to improved communication between actors. One of the most important impacts of ISO 14001 is the establishment of an environmental management language, which has helped simplify communications among organizations and their stakeholders by reaching consensus on terminology.

ISO/TC 207 has defined such basic elements of as EMS as "continual improvement", "environmental impact","environmental aspect" and "environmental policy", minimising misinterpretation of the standard text.

The revision of ISO 14001 in 2004 improved its readability and contributed to easier understanding of its requirements. The official translation of ISO 14001 by national standardization bodies has facilitated environmental management communication across borders, especially for multinational corporations.

Terminology has also been standardized in national laws and other regulations, leading to the integration of ISO 14001 into the regulatory schemes in Argentina, Canada, China, Mexico and Russia.

Impact on other environmental standards

ISO 14001 has also become an internationally recognised compass in the expanding field of environmental management. It serves as a pointer to the ISO 14000 family as a whole through which organizations receive the best available information about state-of-the-art environmental management.

ISO 14001, which is the only standard in the family that offers the certification option, addresses firstly top management and secondly every employee of the organization.

The other standards deal with specific issues such as life cycle assessment, environmental labelling, environmental impact assessment and environmental performance evaluation. They are not cer-

The increasing importance of environmental management for organizations has made it a subject for management education. (Photo: University of Heidelberg)

tifiable standards and mainly address specialists in environmental management.

The absence of certification for these standards makes it difficult to analyse their take-up and level of implementation among organizations. During their development, a number of these have been tested in pilot projects and now they need more time to make an impact on the business community and other organizations.

However, for organizations that implement ISO 14001, the standard opens a broader perspective on environmental management and increases the chances that they will benefit from the knowledge and experience distilled in other standards of the ISO 14000 family.

The ISO 14000 family not only provides organizations with state-of-the-art methodology to handle internal and external environmental risks, but also provides a benchmark for the various aspects of environmental management, increasing the likelihood that they may be adopted or referred to in environmental regulations. Therefore, an organization which actively follows the logic of the ISO 14000 standards readies itself for eventual changes in regulatory regimes and so minimizes its external risks.

Impact on management education

The increasing importance of environmental management for organizations has made it a subject for management education. Courses in environmental management are held in many universities and business schools, with content largely determined by the ISO 14000 standards.

Such topics as general requirements of an EMS, life cycle assessment, environmental performance indicators and environmental communication rely on the relevant ISO 14000 standards as a reference.

The continual upgrading of standards can lead to the upgrading of management education. Due to the establishment of an international environmental management language drawn from the ISO 14000 family, textbooks can be translated more easily and more correctly.

However, very little has yet been done to include the ISO 14000 family in general management and business administration courses. Improvements in this area would strengthen both the standards and the quality of management education.

The ISO Award for Higher Education in Standardization, which will be presented for the first time in September 2007, at the ISO General Assembly in Geneva, Switzerland, may become one of the significant driving forces for institutions of higher education to develop and implement programmes related to standardization in general and to environmental management standardization in particular.

Future trends

ISO 14001 specifically has become an internationally recognised benchmark for environmental management strategy. The continual optimization of the ISO 14000 family in general can help it to become one of the main driving forces for the steady improvement of standardized environmental management systems. There are several trends that can be identified, some already underway and others potential future ones.

A first trend in the field is a consolidation of the standards, because organizations find it difficult to follow the requirements of a multiplicity of overlapping requirements. ISO has already undertaken several steps in this direction, by replacing the first published standards for environmental auditing and life cycle assessment them with a smaller number of improved versions.

A second trend is the continual improvement of the ISO 14000 family so that it remains at the state of the art, and aligned to evolving business and technical conditions. An example is the current development of ISO 14005, *Guidelines for a staged implementation of an environmental management system, including the use of environmental performance evaluation*. This is expect to encourage smaller companies – by far the majority of the world's enterprises – to implement an EMS and will also make clearer the linkage between an EMS and environmental performance evaluation.

A third trend is the development of new standards in accordance with the needs of organizations and the general development of environmental management. New standards can be more specific, making them better suited to certain industrial branches and corporations, for instance standards for small- and medium-sized enterprises, multinational corporations, public administrations and others.

This could lead to the development of ISO 14001-based equivalents to the sector-specific ISO 9001 standards, technical specifications or International Workshop Agreements for the automotive industry, healthcare, medical devices, education, local government and so on. An ISO 14001 equivalent to ISO 10014:2006, which provides guidelines for realizing financial and economic benefits through ISO 9001, would be a prime candidate for development.

In conclusion, one of the main impacts of ISO 14001 is its impetus for the creation of a practical toolbox of generic and sector-specific environmental management standards to decision-makers in the implementation of actions supportive to sustainable development. •

Launching of ISO 14065 for accrediting greenhouse gas verification bodies

by **Geoff Visser** and **Kevin Boehmer**

ISO has launched ISO 14065: 2007, an important new standard that completes its initial climate change standards architecture.

In March 2006, ISO launched its greenhouse gas (GHG) accounting and verification standards – ISO 14064:2006 – as a contribution to the international effort to combat climate change.

The complementary new standard, ISO 14065:2007, *Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition*, was published on 15 April 2007. It details requirements for GHG validation or verification bodies for use in accreditation or other forms of recognition.

While ISO 14064 provides requirements for organizations or persons to quantify and verify GHG emissions, ISO 14065 specifies accreditation requirements for organizations that validate or verify resulting GHG emission assertions or claims.

Objective assessment

GHG validation or verification bodies are responsible for completing an objective assessment of GHG assertions and providing a formal written declaration which provides assurance on the statements contained in the assertion.

The aim of GHG validation or verification is to give confidence to parties that rely upon a GHG assertion or claim, for example regulators or investors, that the bodies providing the declarations are competent to do so, and have systems in place to manage impartiality and to provide the required level of assurance on a consistent basis.

ISO 14065 provides requirements for bodies that undertake GHG validation or verification using ISO 14064 or other relevant standards or specifications.

ISO 14065 principles include **impartiality, competence and confidentiality**

The need for an International Standard that would allow for the accreditation or recognition of GHG validation or verification bodies was jointly identified by ISO's Committee on Conformity Assessment (CASCO) and technical committee ISO/TC 207, *Environmental management*.

Operating in accordance with ISO's sector-specific conformity assessment policy, the joint ISO/CASCO-ISO/TC 207 Working

Group 6, *GHG validation or verification bodies*, was established in September 2004 to undertake this work.

Considerable achievement

Working Group 6 was comprised of some 70 international experts from 30 countries and several liaison organizations, including the International Accreditation Forum. The group completed the development and publication of ISO 14065 in 31 months (September 2004 to April 2007) – a considerable achievement in reaching international consensus in this complex technical and political area.

The purpose of the ISO 14064 and ISO 14065 standards are to:

- develop flexible, regime-neutral tools for use in voluntary or regulatory GHG schemes;
- promote and harmonize best practice;
- support the environmental integrity of GHG assertions;
- assist organizations to manage GHG-related opportunities and risks; and
- support the development of GHG programmes and markets.

ISO 14065 articulates a number of principles that GHG validation or verification bodies need to demonstrate and that shape subsequent technical requirements. Principles include impartiality, competence and confidentiality.

General technical requirements include standard provisions related to legal, governance, management, liability and financing matters. Impartiality requirements include stipulations for a GHG validation or verification body's commitment to impartiality, avoidance of conflict of interest and mechanism for oversight of impartiality.

Competencies

Specific technical requirements include those that define personnel competencies, including management and GHG validators or verifiers. ISO 14065 requires that GHG validation or verification teams – as opposed to individuals – have a specific set of competencies in environmental, GHG technology and auditing areas.

Additional requirements are provided for GHG validation or verification team leaders. Other clauses detail provisions for information sharing and access, communication of responsibilities, confidentiality and record keeping.

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ISO 14065 includes process requirements through various phases of GHG validation or verification, including pre-engagement, planning, validation or verification and the issuance of a validation or verification statement components.

Normative reference to ISO 14064-3:2006, *Greenhouse gases – Specification with guidance for the validation or verification of greenhouse gas assertions* is made through respective process steps. Attributes of appeals and complaints processes are standardized and management system requirements are articulated.

ISO 14065, like its companion ISO 14064, recognizes that voluntary and mandatory climate change programmes have or are being developed in many jurisdictions and that there is a need for consistency in GHG quantification, verification and accreditation approaches to reduce duplication, minimize costs and provide for comparability. In response, the ISO standards:

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- are GHG policy neutral;
- can be applied across organization and project types, sizes and sectors;
- satisfy an important market need;
- involve a wide range of stakeholders;
- act as a common "building block" to initiatives or GHG programmes;
- are auditable (ie, validation/verification, accreditation).

ISO 14065 provides to GHG programme administrators, regulators and accreditors a basis for assessing and recognising the competence of GHG validation and verification bodies. It can also be used in other ways, such as in peer assessment within, or between, groups of GHG validation or of verification bodies.

ISO 14064 and ISO 14065 are not in themselves a GHG programme or scheme, instead they are discrete GHG quantification, verification and accreditation tools for use by organizations, project proponents or GHG programmes.

ISO 14065, with ISO 14064-3, represents an architecture for conformity assessment applicable to the validation or verification of GHG assertions or claims. Such application of ISO standards will add confidence, consistency and certainty to the GHG market.

Ensuring credibility

ISO Secretary-General Alan Bryden recently commented: "Claims made about reductions of the greenhouse gas emissions

widely held responsible for climate change may have political and financial implications, in addition to environmental and technical ones. Ensuring their credibility is thus vital.

"ISO is combining its environmental and conformity assessment expertise to develop tools for measuring, validating and verifying such claims. This is a striking example of how ISO's work can help to provide practical tools for meeting the global challenges that the international community is wrestling with."

Deputy Executive Secretary of the United Nations Framework Convention on Climate Change, Mr. Richard Kinley, further adds: "Like standards in any other market these ISO standards will provide frameworks for assessing and verifying greenhouse gases at different levels.

"Applied broadly, they lessen the transaction costs to companies, for example, for those operating in several countries, the costs of understanding different rules and regulations would vanish.

"The ISO standards provide guidelines for various market-based schemes … and thereby contribute to the integration of greenhouse gas reduction into the decision making of economic actors. They may also provide a basis for facilitating connection of different trading schemes by ensuring that the commodity, in our case carbon, is considered equivalent." •

Future ISO 26000 standard on social responsibility reaches positive turning point

by **Roger Frost**

Members of the ISO WG SR leadership team at the Sydney 2007 plenary with UN Global Compact representatives, from left to right: ***Staffan Söderberg,*** *WG Vice Chair;* ***Jorge E.R. Cajazeira,*** *WG Chair, and* ***Kristina Sandberg,*** *WG Secretary;* ***George Kell,*** *Executive Head, UN Global Compact, and* ***Kola Badejo,*** *Special Adviser, UN Global Compact. (Not present in this photo is* ***Eduardo Campos de São Thiago,*** *WG Co-Secretary.)*

The development of the future ISO 26000 standard giving guidance on social responsibility has reached a positive "turning point" in terms of consensus and trust among the broad base of participating stakeholders.

This was the opinion of the leadership of the ISO Working Group on Social Responsibility (ISO/WG SR) at the end of its fourth plenary on 29 January-2 February 2007 in Sydney, Australia.

Increased participation by experts from developing countries

Some 275 people from 54 ISO member countries and 28 international organizations attended, representing the following interests: industry; government; labour; consumers; non-governmental organizations; and service, support, research and others. Notable at the Sydney meeting was increased participation by experts from developing countries and the programme included a developing countries workshop.

Key topics

Among the main activities was work on the key topics which had been identified among the 5 176 comments received from the WG SR's experts on the second working draft of ISO 26000 circulated in October 2006.

Some of the 275 or so people from 54 ISO member countries and 28 international organizations who contributed in Sydney to the development of ISO 26000.

Core issues were agreed at Sydney and grouped in the following four clusters (each assigned a drafting team):

- environment,
- human rights and labour practices,
- organizational governance and fair operating practices, and

- consumer issues and community involvement/society development.

The work is now continuing in order to produce a third working draft for circulation and comment before the fifth WG SR meeting in November 2007.

At this working draft stage, the need is to build consensus among individual experts, while the next stage where the developing standard progresses to committee draft status will aim to build consensus among the national standards bodies and international organizations participating.

The Sydney meeting was hosted by Standards Australia whose Chair, John Castles, officially welcomed the WG SR. Among the objectives of the meeting were to increase the accountability of its processes, to clarify its procedures and to increase participation. In line with this last objective, the WG SR welcomed the decision of the UN Global Compact – with whom it recently signed a memorandum of understanding for enhanced cooperation – and its networks to collaborate by establishing links with WG SR national "mirror" committees.

organizations to remember their obligations to their workforces, communities, and the environment. After Sydney, I am even more confident that ISO 26000 will contribute to helping all kinds of organizations to improve in socially responsible behaviour."

In addition, the ISO/WG SR finalized the establishment of the ISO SR Trust Fund which is now accepting donations to support the group's work.

The next meetings of the ISO/WG SR are :

- 5-9 November 2007, in Vienna, Austria, hosted by the Austrian Standards Institute (ON) with the support of the Austrian Government and Austrian Development Agency (ADA), together with the UN Global Compact and the United Nations Industrial Development Organization (UNIDO)
- 2008, in Santiago, Chile, hosted by the national standards body, INN. •

Vice-Chair Staffan Söderberg, nominated by the ISO member for Sweden, SIS, commented: "Building trust was an important accomplishment during this meeting. The Sydney meeting will be the one remembered as the turning point that put us on the right road."

Global leaders

Chair, Mr. Jorge E.R. Cajazeira, nominated by the ISO member for Brazil, ABNT, commented : "A growing number of global leaders, many countries and related stakeholders have added their voices to those urging

More info

Further information on the ISO/WG SR and ISO 26000 is available on its public Website : **www.iso.org/sr**
Its working documents are publicly accessible at : **www.iso.org/wgsr**

ISO/TS 22003 aims to build confidence in certification of food safety management systems

by **Roger Frost**

A newly published document in the ISO 22000 series gives the requirements for the bodies that carry out auditing and certification of food safety management systems (FSMS).

ISO technical specification ISO/TS 22003:2007 provides information, criteria and guidance for carrying out ISO 22000:2005 auditing and certification. It will therefore be useful for certification bodies, the accreditation bodies that approve them, suppliers wishing to have their FSMS certified, their customers and food sector regulators.

Certification to ISO 22000:2005, *Food safety management systems – Requirements for any organization in the food chain*, is not a requirement of that standard, which can be implemented solely for the benefits it provides.

However, where certification is required by customers, or by regulators, or is judged desirable as a marketing differentiator, ISO/TS 22003:2007 will help to build confidence in such certification throughout the food supply chain.

Comprising 10 clauses, two annexes and a bibliography, ISO/TS 22003 covers topics such as resource requirements, competence of management and personnel (including auditors and persons involved in decisions related to certification), process requirements and requirements for certification bodies.

Rigorous requirements

It closely follows the requirements established by ISO 17021:2006, *Conformity assessment – Requirements for bodies providing audit and certification of management systems*, which places rigorous requirements for competence and impartiality on the bodies that offer audit and certification to management system standards.

ISO/TS 22003 is the latest document in the ISO series for food safety management systems, which harmonizes good food safety practice worldwide. It was launched in 2005 with ISO 22000, backed by an international consensus among experts from government and industry.

ISO 22000 can be applied to organizations ranging from feed producers and primary producers through food manufacturers, transport and storage operators, and subcontractors to retail and food service outlets. Related organizations such as producers of equipment, packaging material, cleaning agents, additives and ingredients are also affected by the prospective standard.

Food supply chain

The standard was followed by technical specification ISO/TS 22004:2005, *Food safety management systems – Guidance on the application of ISO 22000:2005*, which gives advice for all types of organization within the food supply chain on how to implement an FSMS.

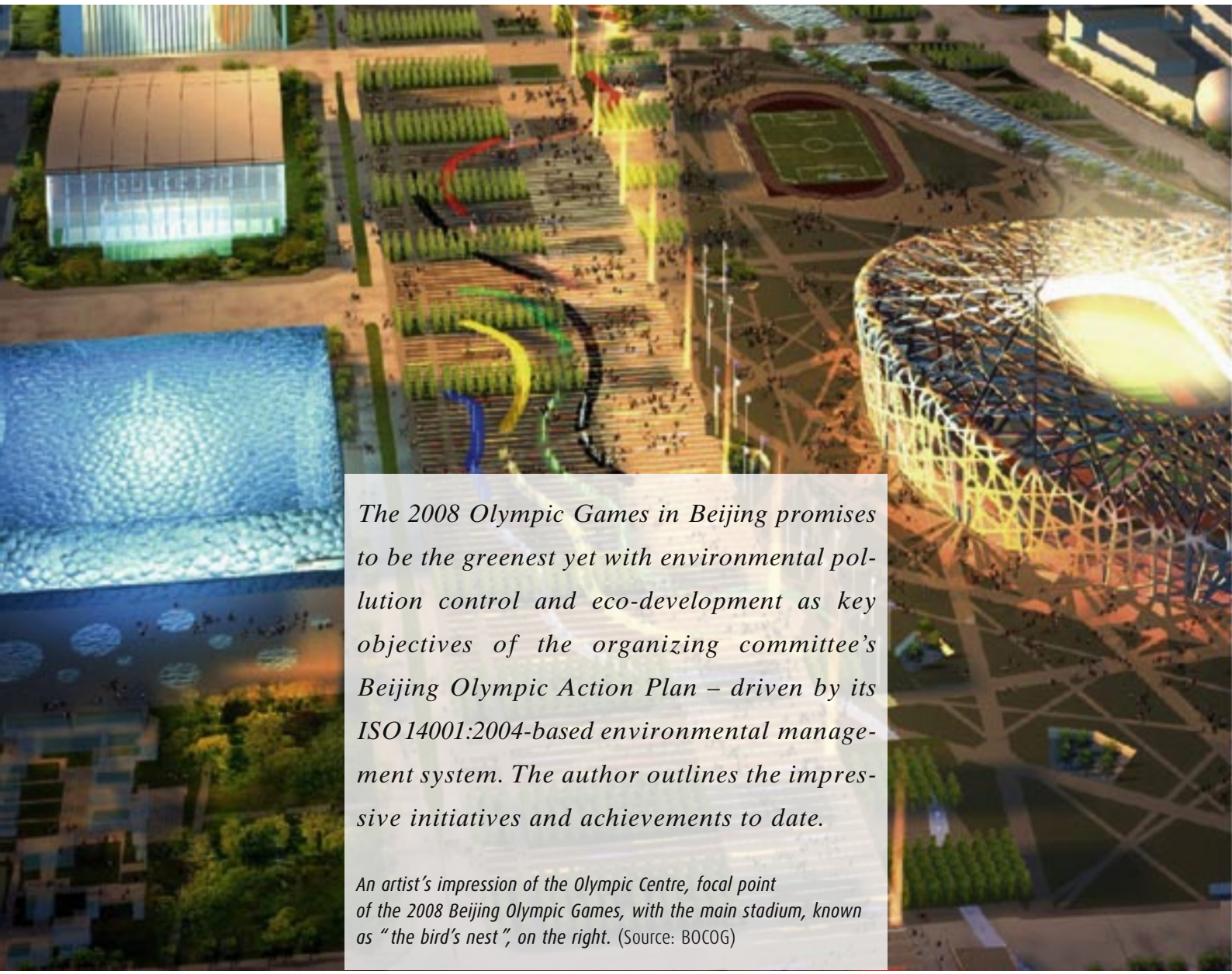
A related publication will be published shortly, *ISO 22000 – Are you ready ?* which provides organizations with self-assessment guidance to establish whether they are ready for ISO 22000 certification.

ISO/TS 22003 provides information, criteria and guidance for carrying out ISO 22000 auditing and certification

ISO/TS 22003:2007, *Requirements for bodies providing audit and certification of food safety management systems*, was developed by ISO technical committee ISO/TC 34, *Food products,* in collaboration with ISO/CASCO, Committee on conformity assessment. It costs 84 Swiss francs and is available from ISO national member institutes (listed with contact details on the ISO Web site – **www.iso.org**) and ISO Central Secretariat (**sales@iso.org**). •

Fish market in Jerez, Spain (Photo : P. Krieger)

ISO 14001's role in making Beijing 2008 the greenest Olympics yet



The 2008 Olympic Games in Beijing promises to be the greenest yet with environmental pollution control and eco-development as key objectives of the organizing committee's Beijing Olympic Action Plan – driven by its ISO 14001:2004-based environmental management system. The author outlines the impressive initiatives and achievements to date.

An artist's impression of the Olympic Centre, focal point of the 2008 Beijing Olympic Games, with the main stadium, known as "the bird's nest", on the right. (Source: BOCOG)

The National Gymnasium, seen in this artist's impression, will stage the key gymnastics events during the 2008 Olympics. (Source: BOCOG)

by **Yuhua Fan**

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When the International Olympic Committee (IOC) announced the success of China's bid for the 2008 Olympic Games, the Beijing Organizing Committee (BOCOG – **www.beijing2008.cn**) committed China to ensuring that the event will be a *Green, High-tech* and *People's Olympics*.

In 2002, a year after the announcement, BOCOG published its Beijing Olympic Action Plan with environmental pollution control and eco-environment development as key objectives in preparing for the Games, and during the event itself.

Since then, BOCOG, the municipality, and the people of Beijing have been making great efforts to achieve these ambitious goals – in which ISO 14001:2004 has been playing a vital and indispensable role.

Following is a brief glimpse of some of their work and achievements.

Remarkable achievements

BOCOG's ISO 14001:2004-certified EMS covers implementation of its green office guidelines, and guidelines for planning of event routes, construction of venues, marketing, accommodation and catering services, communication, procurement, organization of large scale activities, transportation, planning of the Olympic Torch relay route, and environmental management.

A tremendous amount of work has already been completed and the achievements remarkable. Here are some of the highlights:

- *Venue design and construction*

The venue construction guidelines conform to, or exceed, relevant national laws and standards, with referencing foreign standards. They provide requirements for energy conservation, planting, green construction materials, water resource protection, waste disposal and noise reduction.

A technical standard for venue/facilities design was also developed, including requirements for cleaner energy, indoor air quality, electromagnetic radiation control and reduction of light pollution.

Environmental pollution control and eco-development as key objectives of the **Beijing Olympic Action Plan**

Many of these environment-friendly concepts are incorporated into the design of the Olympic Village and stadiums. For example, the National Stadium, with a seating capacity of 80 000, is designed to meet many environmental needs by taking advantage of state-of-the-art technologies.

Bath water in the Beijing Olympic Village will be heated by solar energy, and street lighting will also be solar powered. Waste disposal and

site cleaning procedures will reduce waste and enhance recycling. Rain and grey water systems will operate in the 1135 hectare (2805 acre) Beijing Olympic Green, and in some of the other venues.

Measures are being taken to prevent or reduce environmental pollution during the construction phases. To set a good example and encourage green construction, some construction sites received awards from BOCOG for their environmental achievements.

Environment monitoring centres at the Olympic Green and other Olympic construction sites are assessing data on the environmental impacts of construction, and will be used to control air quality during the Games. Video cameras at 15 key points in Beijing also monitor environmental conditions and construction dust.

• Green procurement

BOCOG attaches great importance to ozone protection. Ozone-friendly air conditioners and fire extinguishers have been selected to equip all the Olympic venues and facilities. In this regard, the Beijing Olympics is far ahead of national requirements specified according to the Copenhagen Amendment under the Montreal Protocol, where China is required to stop using CFCs and halon by 2010, and HCFCs by 2040.

In September 2005, BOCOG won the Golden Award for Achievements in Ozone Protection presented by the State Environment Protection Administration (SEPA).

BOCOG's Environmental Policy

BOCOG's environmental policy, supported by its ISO 14001:2004 certified EMS, commits the organization to:

"Integrate the sustainable development of environmental protection, natural conservation and maintaining an ecological balance into Olympic engineering, construction, marketing development, procurement, logistics, accommodation, catering and other large-scale events, and minimize the adverse impact on environmental and ecological systems.

"Fully support the municipal government in consolidating the development of environmental protection infrastructure, improve the ecological environment of Beijing city, as well as enhance the ongoing coordinative development of economy, society and environment.

"Develop communication and education, encourage public participation in environmental protection, and raise public awareness of the environment through the extensive influence and power of the Olympic Games.

"After the Olympics, demonstrations of Olympic engineering projects, innovative environmental management of major sports events, and public participation in the continuous improvement of Beijing's environment will become a rich and valuable legacy of the Games."

• Contracted hotels

BOCOG has developed "Guidelines on Environment Protection for Hotel Services" establishing requirements for environmental management, energy/resource conservation, pollution prevention/reduction and room services as an integral part of the contract. To qualify, hotels must submit a self assessment to BOCOG for review by 30 June 2007.

Last year the State Tourism Bureau published the sector standard LB/T007 – 2006, *Green hotels,* including requirements for cleaner production, green design/consumption/food/lighting and service, environmental labelling, environmental policy and environmental performance, referenced to ISO 14001:2004. The standard is recognized by BOCOG in parallel to its Guidelines for the purpose of hotel contracting.

The purpose of this policy is to encourage hotels to adopt the standard so as to keep providing green services after 2008, as well as to reduce duplicate work by hotels.

• Torch relay planning

Guidelines for the Olympic Torch relay, based on international agreements, national laws and the principles of Green Olympics, cover many aspects of environment protection along the route, including world heritage and other historic sites, sanitary conditions, waste disposal and pollution control, materials, products, facilities and equipment, and also the behaviour of the people involved.

• Raising awareness

A truly Green Olympics relies on the endeavours of many different people, in addition to government support. BOCOG's communication and education programmes have significantly raised environmental awareness by involving experts, students, entrepreneurs and the general public in its green efforts.

• International cooperation

BOCOG is cooperating with the International Olympic Committee (IOC) and the United Nations Environment Programme (UNEP) in a coordinated campaign to promote the environmental aspects of the Beijing Olympics.

In a 2005 agreement, UNEP offers to partner BOCOG in this initiative with the aim of making the 2008 Olympic Games the greenest yet, from reducing air, water and noise pollution to transportation, landscaping and disposal of solid waste. UNEP will also conduct an environmental audit of the event.

At the UNEP Global Forum for Sport and Environment held in Lausanne, Switzerland, on 1 December 2006, UNEP Executive Director Achim Steiner praised China for its efforts and achievements in air pollution control, sand storm harnessing and traffic management in preparation for 2008 Olympics.

Beijing's aims for the Green Olympics

As the main host city of 32 of the 37 Olympic venues, Beijing is in full support of BOCOG's green commitment, and sees it as an historic opportunity to accelerate its economic development, urban construction, social progress and living standards, while improving the environment.

Since China's successful Olympic bid in 2001, the municipality of Beijing has made great efforts to improve the city's environment. Investment in environment protection has grown from CNY 13.4 billon (approx USD 1.7 billon) in 2002, to CNY 20 billion (approx USD 2.6 billon) in 2006.

• Air quality

Beijing has established air quality targets by using the number of days with air quality reaching the Class II limits set by the relevant national standard as the indicator. These targets have been fulfilled or exceeded every year since 2001 as a result of some 200 measures, including:

- obliging pollution-intensive enterprises to implement ISO 14001:2004;
- replacing 15000 coal boilers with gas or oil fueled ones;
- imposing more stringent vehicle emissions standards – by 2008, all new vehicles sold in Beijing must meet national standard IV, equivalent to Euro 4;
- replacing 15000 old taxis and 3000 old buses in 2006;
- putting 4000 gas-fueled buses into service;
- relocating 200 polluting enterprises from downtown city and suburbs to less environmentally sensitive areas;

Contracted hotel employees receive environmental training in preparation for the Olympics. (Source: BOCOG)

ISO 14001:2004 has been playing a vital and indispensable role

The Olympic Village, depicted here by an artist, is being constructed in conformity with the organizing committee's ISO 14001:2004 certified environmental management system. (Source: BOCOG)

– strengthening pollution control in metallurgical, chemical, electricity and cement industries;

– reducing sand storms in cooperation with neighbouring provinces.

By 2008, the indices of SO_2 (sulphur dioxide), NO_2 (nitrogen dioxide) and CO_2 (carbon dioxide) in the urban area will meet World Health Organization standards, and the density of inhalant particles are expected to fall to the levels of major cities in developed countries.

• Water management

Beijing's water management focuses mainly on improving surface water quality, water saving, sewage treatment, water recycling and protection of underground water. Measures and achievements include:

- *Surface water quality* – controlled or improved in urban waterways, rivers and reservoirs by monitoring effluent from sewage treatment. A total of 45 km of rivers was cleaned up in 2006.
- *Water saving* – by water pricing, household measurement, promotion of water saving awareness and use of water-saving appliances.
- *Sewage treatment* – involving building 14 sewage treatment plants in Beijing during 2001-2006. By 2008, more than 90 % of urban sewage will be treated, exceeding the Olympic target.
- *Water recycling* – implementing grey water treatment systems for industrial, agricultural, landscape and public utility purposes. In 2006, 200 million m^3 of water was reused, beating the city's record.

• Waste management

Waste management measures include reducing industrial, commercial and domestic solid wastes by separation, collection, treatment, recycling and dumping, and the construction of treatment facilities. As a result, the level of hazard-free garbage treatment has reached 96 % in the eight urban districts, and 57 % in suburban areas.

Stricter controls have also been imposed on noise pollution, electromagnetic radiation and radioactivity.

Ecological protection

Beijing has also introduced a number of initiatives to protect the natural habitat, involving afforestation and plantation, underground water protection, and preservation of delicate ecosystems:

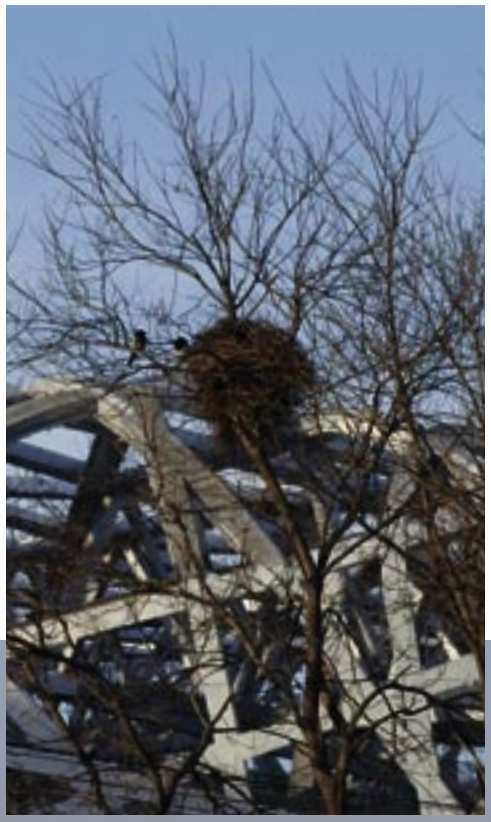
- *Afforestation and plantation* – nearly 28 million trees were planted in 2006 covering over 12 million hectares (29.6 million acres) of city, urban and satellite city areas.
- *Underground water protection* includes reducing industrial and agricultural consumption, conserving rain and flood water to replenish underground reservoirs, reducing use of chemical fertilizers and pesticides, and developing ecological agriculture.
- *Protection of delicate ecosystems* from over exploitation, cultivation and lumbering, and conservation of wild habitats and biological diversity.

Conclusion

This article gives just a glimpse of the many enthusiastic initiatives taken by BOCOG, the municipality of Beijing, and the Chinese people in working towards the "Green Olympics".

Beijing will be ready in 2008 to welcome friends from all over the world with blue skies, clean water, green trees, beautiful landscapes, excellent facilities – and warm Chinese hospitality. •

Beijing is obliging pollution-intensive enterprises to implement ISO 14001:2004



Two early birds secure a privileged view of the 2008 Olympics from their grandstand bird's nest seat overlooking the so called "bird's nest" stadium. (Photos: Xiao Yujing).

ISO 9004:2000 used for benchmarking by European medicines agencies

by **Marijke Korteweg**

ISO 9004:2000 has been used as the basis for a benchmarking system among the medicines agencies in 30 European countries. The author, voted a European Quality Leader of 2006, describes this initiative which aims "to contribute to the development of a world class regulatory system for medicinal products".

A tailored version of ISO 9004:2000, *Quality management systems – Guidelines for performance improvements*, is being used as the basis for a benchmarking system for medicines agencies in 30 European Union/European Economical Area (EU/EEA) countries. The aim is to develop a world class regulatory system for medicinal products based on a network of agencies operating to best practice standards.

This article reviews some of the background that led to the choice of ISO 9004:2000 as the foundation of benchmarking management systems at medicines agencies, supporting the work in evaluating and supervising medicines for human and veterinary use.

A drastic rethink

The pharmaceutical industry is hindered by ever increasing development costs and by a shortage of specialists in biotechnological and innovative medicines and new or rare diseases. To evolve from good to great, or even just to survive, requires a drastic rethinking of the pharmaceutical business – and that includes the authorities responsible for the regulatory framework controlling medicinal products for human and veterinary use.

Those authorities today understand the importance of working together on common technical documents to speed commercialization of new medicines and the value of mutual recognition agreements and exchange of information. These changes not only imply a common understanding of technical/regulatory requirements, but also require consistency in interpretation and application – whether in assessments of

applications, inspections or pharmacovigilance.

However, one of the greatest challenges is to manage such a network organization involving the EU/EEA's common approach to medicinal products and existing expertise at the level of the National Competent Authorities (NCAs). The prerequisites to ensure the quality and consistency of deliverables resulting from cooperation between different medical authorities increasingly resemble those of the management systems operated by large international corporations.

The need is to "run it as a business" – not one struggling to survive, but one that has made it from good to great. For the benefit of the patient, the animal, and healthcare in general, such an approach is a must.

Benchmarking: a cost-effective tool

Quality, consistency and the timely delivery of services and opinions provided by the network of regulatory authorities can only be ensured if quality and regulatory compliance is built into every step of the process – and if the process capability is enhanced by continual improvement. Benchmarking can provide the answer.

EU benchmarking in medicinal products was first developed within the framework of the Pan-European Regulatory Forum (PERF) to ensure that Good Regulatory Practices would be implemented in a harmonized way after the EU enlargement in 2004.

The third Pan-European Regulatory Forum on Pharmaceuticals (PERF III) in 2003 helped candidate countries – Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia – prepare their regulatory systems before joining the EU.

Marijke Korteweg leads the integrated quality management/audit team at the European Medicines Agency (EMEA) in London, United Kingdom, which provides advice and support to top management in line with ISO 9001:2000.

She is also responsible for the logistics, methodology, training and execution of the benchmarking of more than 40 medicines agencies in the EU/EEA. Marijke Korteweg is visiting professor at the Antwerp University in Belgium, Chair of the Integrated Management Special Interest Group and member of the Professional Policy Board of the Chartered Quality Institute, United Kingdom. She was elected Quality Manager of the Year 2005 (public sector) by the Flemish Quality Management Centre (VCK), and a European Quality Leader in 2006 by the European Organization for Quality.

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Benchmarking is a tool to compare individual integrated (quality and risk) management systems and to identify effective, efficient and feasible best practices. "Feasible" because authorities have limited resources, especially for managerial and support processes. Benchmarking has a positive objective, and ensures the continual improvement of the European medicines agencies' network.

A benchmarking visit and assessment is different from an audit focused on compliance. Of course, non-compliance identified during a benchmarking assessment is an opportunity for improvement, and will lead to an improvement action.

Benchmarking is about *comparing*, finding best practices together, exchanging experiences, and about "ad hoc" consultancy by colleagues working on similar tasks in different organizations. It is this process of exchange of experience that makes benchmarking such an excellent value-adding tool.

Why ISO 9004:2000?

Using ISO 9004:2000 for benchmarking encourages mutual understanding between partners not only in the EU/EEA, but worldwide.

Since the network partners had to establish the maturity level of their own management systems before the benchmarking visits by teams of colleagues from other agencies, a self-assessment questionnaire addressing major business/management aspects of the organization was needed.

Such questionnaires are readily available and a comparison between the European Federation for Quality Management (EFQM), ISO 9004:2000 and the Baldridge award self-assessments showed that the management principles addressed were quite similar. Therefore, the decision was made to use the self-assessment questionnaire annexed to ISO 9004:2000 (see **Table 1**, *opposite*).

The aim is to develop a world class regulatory system for medicinal products

This questionnaire also facilitates implementation and certification of an ISO 9001:2000-based quality management system by an agency. Moreover, the ISO standard guides top management in understanding the requirements of ISO 9001:2000 – and this is especially important for managers more specialized in medical/pharmaceutical/life sciences and regulatory affairs than in management systems.

The ISO 9004:2000 questionnaire was circulated three times to all EU/EEA national competent authorities in the PERF III Benchmarking programme.

They were asked to add examples to each question to increase the likelihood of a common understanding

Maturity level	Performance level	Guidance
1	No formal approach	No systematic approach evident, no results, poor results or unpredictable results
2	Reactive approach	Problem- or corrective-based systematic approach, minimum data on improvement results available
3	Stable formal system approach	Systematic process-based approach, early stage of systematic improvements; data available on conformity to objectives and existence of improvement trends
4	Continual improvement emphasized	Improvement process in use; good results and sustained improvement trends
5	Best-in-class performance	Strongly integrated improvement process; best-in-class benchmarked results demonstrated

Table 1 – *This system of performance maturity levels used for EMEA benchmarking visits is taken from ISO 9004: 2000 Annex A self-assessment guidelines.*

to the original Annex A question is always present.

Although benchmarking is not the same as auditing, 19011:2002, *Guidelines for quality and/or environmental management systems auditing*, proved to be a valuable aid to benchmarking. Those more familiar with financial auditing and the related Institute of Internal Auditors standards (IIA standards – **www.theiia.org**) experience a certain "déjà vu" when familiarizing themselves with ISO 19011:2002 and the benchmarking approach.

Benchmarking visits to 17 agencies/ministries took place within the PERF framework by teams consisting of representatives of EU National Competent Authorities, EMEA,

before the "reference questionnaire", addressing the 27 top level managerial questions, was finalized on 30 January 2003.

The finalized questionnaire was tailored to the needs of pharmacovigilance and assessment activities related to medicinal products for human and veterinary by the PERF priority action areas (PAAs). It now covered the management and quality assurance aspects of these key processes more in detail.

Tailoring of questions – as recommended in ISO 9004:2000 self-assessment Annex A – makes for easier understanding by management and staff of the medicines agencies. To aid comparison and help those agencies planning to certify to ISO 9001:2000, the reference

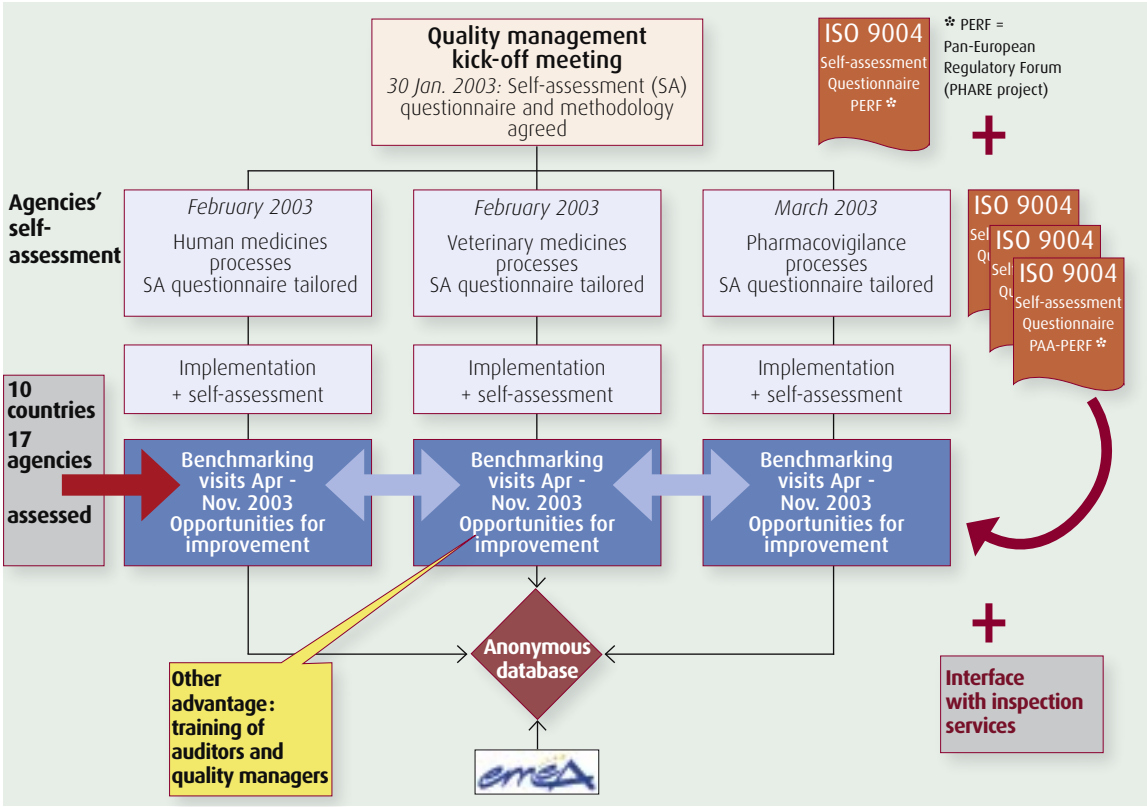

Figure 1 – *This diagram shows quality management benchmarking strategy based on ISO 9004:2000 developed by EMEA in view of EU enlargement.*

European Directorate for the Quality of Medicines (EDQM) and from the then EU candidate countries. They concentrated on the 27 questions of the "reference questionnaire" and the interfaces with inspectorates and control laboratories.

The anonymous database resulting from these PERF benchmarking visits is kept at the EMEA and made available to the network partners as a source of best practice.

The EU benchmarking system

Since the PERF benchmarking self-assessment and the accompanying anonymous exchange of results was seen as a useful tool for management of the interlinked agencies – forming a virtual medicines agency in the EU/EEA – the EU consulted the heads of the medicines agencies about developing and implementing the benchmarking system further (see **Figure 1** *preceeding page*).

> ISO 9004:2000 and ISO 19011:2002 have enabled **a cost-effective benchmarking system**

Because the self-assessment and benchmarking visits had a positive impact on their own processes, the heads of the medicines agencies decided to continue benchmarking with extra questions tailored to organizational management, the pharmacovigilance system, application assessments and inspection services for medicinal products.

Tailoring ISO 9004:2000 questions

PERF benchmarking and the current EU benchmarking system also incorporate the recommendations in key performance indicators derived from the G10 Medicines Report of 7 May 2002, and the 1 July 2002 Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Region, entitled, "A Stronger European-based Pharmaceutical Industry for the Benefit of the Patient – a Call for Action" (see **Figure 2**).

The resulting aim of the Benchmarking of European Medicines Agencies (BEMA) is "to contribute to the development of a world class regulatory system for medicinal products based on a network of agencies operating to best practice standards".

Results and costs

Since we did not have a specific budget for BEMA, the costs were shared by all partners, and considered an investment in training of management and staff. The BEMA logistics and database, and also the training seminars, were organized and funded by EMEA.

After assessing 35 agencies in 27 countries between July 2005 and May 2006 – on time and within budget – a final report was sent to the Heads of Medicines Agencies to enable them to decide about the continuation of the system.

An extensive anonymous database with descriptions of the existing systems justifying the maturity rating is available to EU/EEA Medicines Agencies to help improve their systems further. An executive summary about BEMA is also available at the Heads of Medicines Agencies Web site[1)].

Conclusion

ISO 9004:2000, its self-assessment questionnaire and ISO 19011:2002 have enabled us to establish a cost-effective benchmarking system to help the European medicines agencies improve the way its network and individual agencies operate. We hope this initiative will benefit all stakeholders and health care generally. •

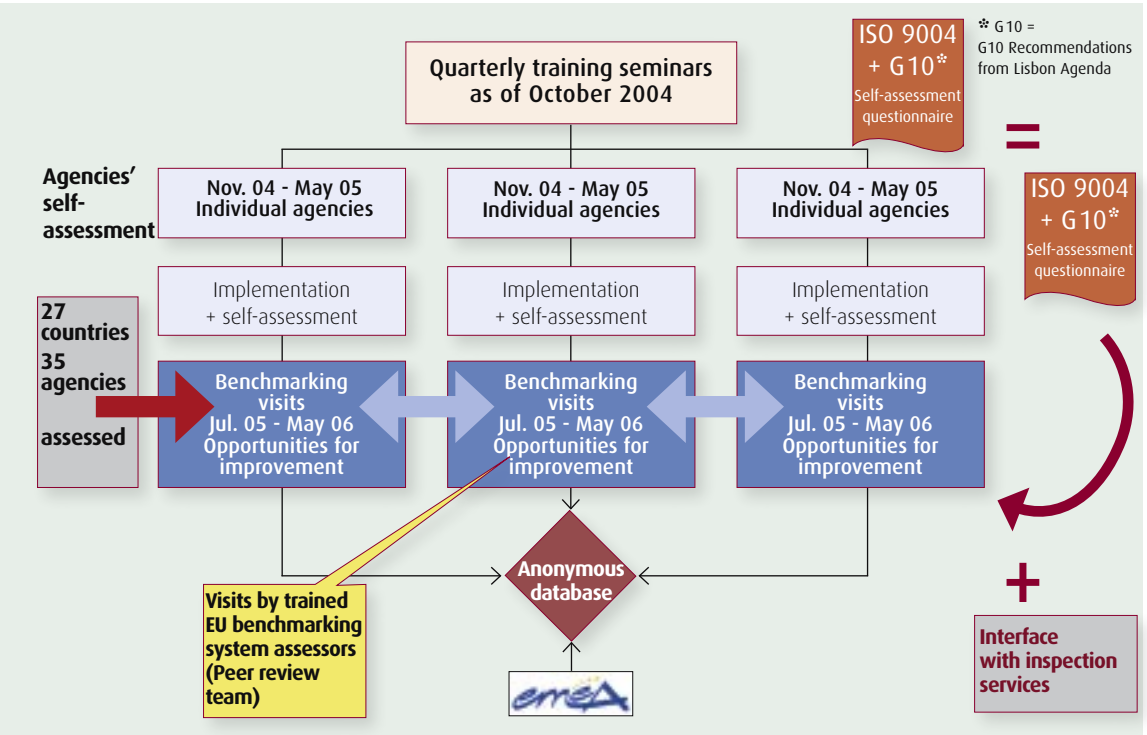

Figure 2 – *This diagram shows the EU benchmarking system strategy based on ISO 9004:2000 tailored to EMEA needs and incorporating G10 recommendations.*

1) **http://heads.medagencies.org/heads/docs/BEMA_executive_1st_cycle.pdf**
http://heads.medagencies.org/heads/docs/BEMA_report_1st_cycle.pdf).

Distance learning programme boosts ISO 22000 in the Ivory Coast

by **Didier Blanc**

Where can one find skills training to help implement ISO 22000:2005 in countries where none exists? A Swiss distance learning course was the answer for consultant Olga Kouassi, who has since helped a food company in the Ivory Coast to achieve certification to the new food safety management standard.

***Didier Blanc** is founder and director of ProCert, a provider of training and certification in ISO 9001, ISO 14001 and ISO 22000 management system standards.*

He is a veterinary surgeon specialized in food hygiene, and a member of working groups WG 8 and WG 11 of ISO technical committees ISO/TC 34, Food products, *responsible for developing ISO 22000:2005,* Food safety management systems – Requirements for any organization in the food chain, *and ISO 22003:2007,* Food safety management systems — Requirements for bodies providing audit and certification of food safety management systems.

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Tuna being processed for canning and export at Pêche et Froid Côte d'Ivoire. (Photos: PFCI)

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Effective implemention of ISO 22000:2005, *Food safety management systems – Requirements for any organization in the food chain requires investment in skills training*[1]. But where can one find such training in countries or regions where none exists? Modern distance learning techniques can provide the answer.

***Olga Kouassi** is a quality management consultant, ISO 9000:2000 and ISO 22000:2005 auditor, and director of Bureau Norme Audit consultancy based in Abidjan, Ivory Coast*

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The ISO 22000:2005 distance learning course which I developed was the solution for Olga Kouassi, a quality management consultant and auditor based in the Ivory Coast, who has collaborated on this article. As a result, she is now qualified to help local companies implement the new standard, and audit their food safety management systems.

"With the expertise I gained from this training, I was able to assist a company from beginning to end, right up to its ISO 22000:2005 certification audit," she says. Ms. Kouassi was able to finance the training course thanks to the support of the Pesticides Intervention Programme (PIP) funded by the European Commission (see box: "The Pesticides Initiative Programme").

1) See also *ISO Management Systems* May-June 2006: "ISO 22000: From intent to implementation".

The Pesticides Initiative Programme

The Pesticides Initiative Programme (PIP) was launched in 2001 by the European Commission at the request of the ACP (Africa/Caribbean/Pacific) group of countries.

Its aim is to enable ACP horticultural production and export companies to achieve conformity with the European regulatory requirements dealing with sanitary quality, consolidate their share in the European fresh fruit and vegetable market, and maintain small producers within the ACP horticultural export sector.

PIP is financed until 2008 by a EUR 34,1 million European Development Fund, and to date has helped 220 ACP enterprises reorganise, develop structures and adapt their practices to achieve long-term control of their sanitary quality. Its activities cover the sanitary compliance of some 100 000 producers.

The organization has set up a pool of competent local experts/providers in many ACP countries in key areas of sanitary quality to anticipate how European regulations and markets will evolve, and has extensively replaced European expertise.

For more information:

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Practical training

ProCert's practical ISO 22000:2005 training course aims to help participants to:

- understand the requirements of ISO 22000:2005 additional to the Hazard Analysis and Critical Control Point (HACCP) system;
- practice case studies in policy, communication, traceability, product recall, selection of prerequisite programmes (PRPs), validation of control measures, etc.;
- implement and audit an ISO 22000:2005-based system, and
- prepare for certification as an ISO 22000:2005 auditor.

The course, which is subdivided into 2-4 hour sessions, is supported by case studies and discusses all the main elements necessary to implement a food safety management system in conformity with the standard. Participants receive immediate feedback on their course work, and are provided with models adaptable to their own business situations. They can also interact with online discussion groups for support and answers to questions. A detailed description of the course is available at: **www.i3academia.com**

Implementing ISO 22000 in the Ivory Coast

Olga Kouassi's successful technology transfer exercise is an excellent example of the global relevance of ISO standards, and the suitability of ISO 22000 for implementation in an African setting.

She believes the new food safety management standard is perfectly suited for implementation by agricultural food enterprises in the Ivory Coast, and confirms that most already have staff with the necessary skills to set up the documentation system.

However, these companies encounter difficulties when introducing the prerequisites, i.e. good hygiene practices. There are often financial obstacles to establishing the necessary infrastructures, particularly in view of the current economic problems in the country.

Nevertheless, she says that this should not pose a major problem since companies are sub-

ject to an obligation of results rather than means, as far as ISO 22000:2005 prerequisites are concerned. On the other hand, there may be reason to fear the attitudes of auditors who, being accustomed to European companies, may have expectations well beyond the local realities.

It is very important, therefore, that the auditors be sufficiently pragmatic to assess actual risk in relation to the quality of the product.

Motivations

A number of food crises in recent years have alarmed consumers in Europe and prompted them and their public authorities to be more demanding in terms of food safety. As a result, there is growing international demand for a framework document on food safety, applicable to all companies along the food chain. Today, food sector companies in the Ivory Coast must provide evidence of having introduced a food safety system in order to access international markets.

Benefits of training

"The ISO 22000:2005 training has been beneficial to us. Indeed, it provided a considerable amount of relevant information and documents that could be easily put into practice. Also, the responses from the discussion groups were highly appreciated," Olga reports.

"With the training help we were able to lead a company through to its ISO 22000:2005 certification audit. This was a source of major satisfaction for us since understanding of the requirements and the introduction of a documented system passed without comment, and no major nonconformities were recorded. However, there were comments about the state of equipment and production plant in relation to the prerequisites."

ISO 22000:2005 implementation in the Ivory Coast

The Ivory Coast ranks first among West and Central African countries in terms of the number of companies with management systems certified to ISO 9001:2000 or ISO 14001:2004 to date. Some 55 from all economic sectors had achieved such certifications at the time of writing, and of these 18 were food sector companies. So far one company had achieved ISO 22000:2005 certification.

Therefore, the Ivorian food companies represent a good potential for ISO 22000:2005 implementation. The trend is expected to gain momentum as the country emerges from its current social and political crisis. •

(Photos: PFCI)

Sonae Sierra's shopping centres go green with ISO 14001

Sonae Sierra is rolling out an ISO 14001:2004 implementation and certification programme among its 43 shopping centres in Europe and South America that is not only reducing its environmental impact, but also increasing customer trust, reducing costs, boosting its asset value and pleasing shareholders.

by **Elsa Monteiro**

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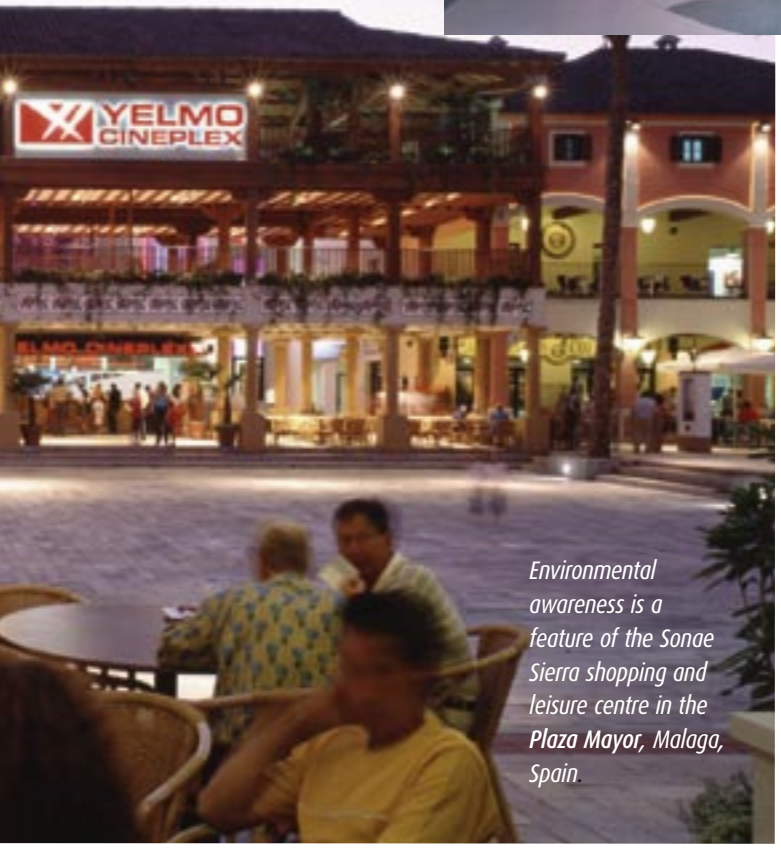
Environmental specialists at Portugal's international Sonae Sierra shopping centre group became aware of ISO 14001:1996 at an early stage and in 1998 the organization built environmental awareness into its business policy. It began implementing an environmental management system (EMS) on the International Standard, but did not at first seek certification.

Sonae Sierra's first ISO 14001 certification was achieved in 2004 to the new version of the standard published that year. However, this certification covered the construction of new shopping centres only. Its purpose was to ensure that contractors operated in accordance with an EMS during the construction process, and in so doing improved their environmental performance.

Following the success of this learning process, we decided to go for company-wide ISO 14001:2004 certification of all shopping centres, starting in 2005, to strengthen growing public awareness of our environmental practices and promote the benefits of "green shopping centres". Ten of a total of 43 centres have been certified to date, with a further nine planned this year.

*Like many others in its international network, Sonae Sierra's elegant shopping centre, **CascaiShopping**, in Cascais, Portugal, operates an ISO 14001:2004-certified environmental management system.*



*Environmental awareness is a feature of the Sonae Sierra shopping and leisure centre in the **Plaza Mayor**, Malaga, Spain.*

The "green centre" concept

Sonae Sierra is introducing a "green centre" concept to ensure that all newly developed shopping and leisure centres will satisfying the company's environmental requirements right from the design phase. These requirements are based on achieving the best available solutions in:

- health and well being through the development of air and lighting quality, and thermal comfort;
- energy use and related atmospheric emissions;
- water use and waste water disposal;
- use of materials and waste disposal;
- sustainability of sites in terms of land-use, water run-off, air pollution, micro-climate, noise, etc. and
- transport.

Sonae Sierra's environmental requirements are now being adopted by every shopping centre in the company's international network. This means that the general procedures (environmental aspects, legal requirements, objectives and

goals) and the operational procedures (energy saving, water quality and consumption management, air quality monitoring, selective waste separation and recycling) are implemented at each site.

Applying procedures

We have already seen significant savings when applying these procedures to developing and managing shopping centres. For example, while energy consumption can be optimized via our "intelligent building management system (BMS)", we monitor water consumption, carry out periodic audits, and have implemented economy measures such as timer systems for taps.

About Sonae Sierra

Sonae Sierra is an international shopping centre specialist company founded in Portugal in 1989, currently owned 50 % by Sonae and SGPS (subsidiary of Portugal Telecom), and 50 % by the Grosvenor Group, a United Kingdom-based property development, investment and fund management organization.

The company owns or co-owns 43 shopping centres in Portugal, Spain, Italy, Greece, Germany and Brazil with a total Gross Leasable Area (GLA) of over 1,6 million sq m, and has 14 major projects under development in those countries which will add a further 500 000 sq m GLA. In addition, more than two million sq m of GLA are under management involving some 7 290 tenants

Over 400 million visits to Sonae Sierra shopping centres were recorded in 2005, and the company claims to have received more awards than any other retail operator in the sector.

*Sonae Sierra's ISO 14001:2004-certified **Luz del Tajo** shopping and leisure centre in Toledo, Spain, was recently voted "Best Shopping Centre" by the Spanish Shopping Centre Association.*

In addition to reducing consumption of resources, Sonae Sierra is also committed to guaranteeing the quality of water provided to visitors to its centres. We do this by having samples systematically analysed by accredited laboratories.

We separate different types of waste which is then sent for recycling, or to landfill in the case of non recyclable materials. Pre-treatment systems have been installed to handle liquid effluents, so that the quality of the effluent can be improved before being discharged into municipal sewers.

Good indoor air quality is assured by ventilation and air-conditioning systems which are subject to strict maintenance routines and regularly inspected to ensure they are running efficiently. All of these systems and elements are subject to regular third party audits, so we can keep a close check on the efficiency of our procedures.

Setting an example...

We are convinced that today's business leader must also be a leader in environmental matters. Sonae Sierra intends to set an example to other shopping centres by demonstrating that good environmental stewardship in business can lead to improved performance and competitiveness. And feedback from our stakeholders and shoppers concerning ISO 14001:2004 certification is already very positive.

To communicate the message, we hold environmental training sessions to help tenants, service companies and suppliers to adopt EMS practices. We also carry out promotions to raise environmental awareness among visitors and school children, and help them follow best environmental practices.

...reaping the benefits

We have no doubt that ISO 14001:2004-based EMS implementation is making a positive contribution to our image, increases customer trust, reduces costs and increases our asset value – in addition to reducing the impact of our activities on the environment. And of course we communicate these certification benefits to all stakeholders ! •

Leading international provider of security services counts on ISO standards in hostile environments

Bomb disposal being carried out by ArmorGroup operators in Kosovo.
(Photo: ArmorGroup)

This article describes how ArmorGroup (United Kingdom) implements an ISO 9001:2000 quality management system and the ISO/IEC 27001:2005 information security standard to help it meet challenges like operating in 160 countries, including life-threatening environments.

INTERNATIONAL

French local government administration first to achieve quadruple certification

The French conurbation of Bourges Plus is the first local government entity in France to obtain quadruple simultaneous certification for the quality, safety, environmental and ethical (QSEE) facets of its sustainable development programme.

Serge Lepeltier, (left) *President of Bourges Plus and a former French Minister of the Environment, with the project team at the QSEE certification ceremony.*

Britain's Financial Ombudsman Service uses ISO 10002 for complaints handling and dispute resolution

SPECIAL REPORT

ISO standards and risk management

Organizations with a commitment to managing risk are generally more open to the adoption of standards such as ISO 9001:2000 (quality management), ISO 14001:2004 (environmental management) and ISO 15489:2001 (records management). They know that implementing standards can enable them to manage risk more effectively and therefore maximize opportunities and minimize losses in the course of achieving corporate objectives.

This article examines the future ISO 31000 standard which will be a strategic-level documents addressing all forms of risk, including safety and the environment.

Focus on Canada

While the Canadian service sector accounts for a significant percentage of the country's economic activity, standards for services have been slow to emerge. This article from the Standards Council of Canada (SCC) explores the Canadian consumer perspective and provides an overview of the opportunities and challenges faced by Canadian industry in developing and applying service standards in the country.

STANDARDS FOR SERVICES

(Photo: NCC-CCN)

When the stakes are as high as global climate change, you need to be able to trust the figures.

ISO 14064
for greenhouse gas accounting and verification.

ISO 14065
for accrediting the verifiers.

ISO

Available from ISO national member institutes (listed with contact details on the ISO Web site at **www.iso.org**) and ISO Central Secretariat Web store at **www.iso.org** or by e-mail to **sales@iso.org**.