

Environmental management

The ISO 14000 family of International Standards



ISO in brief

ISO is the International Organization for Standardization. It has a membership of 160 national standards institutes from countries large and small, industrialized, developing and in transition, in all regions of the world. ISO's portfolio of more than 18 000 standards provides practical tools for all three dimensions of sustainable development: economic, environmental and societal.

ISO standards for business, government and society as a whole make a positive contribution to the world we live in. They ensure vital features such as quality, ecology, safety, economy, reliability, compatibility, interoperability, conformity, efficiency and effectiveness. They facilitate trade, spread knowledge, and share technological advances and good management practice.

ISO develops only those standards that are required by the market. This work is carried out by experts on loan from the industrial, technical and business sectors which have asked for the standards, and which subsequently put them to use. These experts may be joined by others with relevant knowledge, such as representatives of government agencies, testing laboratories, consumer associations and academia, and by nongovernmental or other stakeholder organizations that have a specific interest in the issues addressed in the standards.

Published under the designation of International Standards, ISO standards represent an international consensus on the state of the art in the technology or good practice concerned.

ISO and the environment

ISO has a multi-faceted approach to meeting the needs of all stakeholders from business, industry, governmental authorities and nongovernmental organizations, as well as consumers, in the field of the environment.

1. ISO has developed standards that help organizations to take a proactive approach to managing environmental issues: the ISO 14000 family of environmental management standards which can be implemented in any type of organization in either public or private sectors – from companies to administrations to public utilities.
2. ISO is helping to meet the challenge of climate change with standards for greenhouse gas accounting, verification and emissions trading, and for measuring the carbon footprint of products.
3. ISO develops normative documents to facilitate the fusion of business and environmental goals by encouraging the inclusion of environmental aspects in product design.
4. ISO offers a wide-ranging portfolio of standards for sampling and test methods to deal with specific environmental challenges. It has developed some 570 International Standards for the monitoring of such aspects as the quality of air, water and the soil, as well as noise, radiation, and for controlling the transport of dangerous goods. They also serve in a number of countries as the technical basis for environmental regulations.

Environmental management and sustainability

Organizations around the world, as well as their stakeholders, are becoming increasingly aware of the need for environmental management, socially responsible behaviour, and sustainable growth and development.

Accordingly, as the proactive management of environmental aspects converges with enterprise risk management, corporate governance, and sound operational and financial practices and performance, International Standards are becoming increasingly important for organizations to work towards common and comparable environmental management practices to support the sustainability of their organizations, products, and services.

Furthermore, governments and regulatory bodies are increasingly looking to ISO standards to provide a framework to ensure alignment and consistency both nationally and internationally.

ISO International Standards and related normative documents provide consumers, regulators and organizations in both public and private sectors with environmental tools with the following characteristics :

- ✓ **Technically credible** as ISO standards represent the sum of knowledge of a broad pool of international expertise and stakeholders
- ✓ **Fulfil stakeholder needs** as the ISO standards development process is based on international input and consensus
- ✓ **Facilitate the development of uniform requirements** as the ISO standards development process is built on participation by its national member institutes from all regions of the world
- ✓ **Promote efficiencies** when the same standards are implemented across markets, sectors, and/or jurisdictions
- ✓ **Support regulatory compliance** when the standards are used to meet market and regulatory needs
- ✓ **Enhance investor confidence** because the standards can be used for conformity assessment such as by audit, inspection or certification. This enhances confidence in products, services and systems that can be demonstrated to conform to ISO standards and provides practical support for regulation.



ISO/TC 207, *Environmental management*

Origins

ISO technical committee **ISO/TC 207, *Environmental management***, is responsible for developing and maintaining the ISO 14000 family of standards. The committee's current portfolio consists of 21 published International Standards and other types of normative document, with another nine new or revised documents in preparation.

ISO/TC 207 was established in 1993, as a result of ISO's commitment to respond to the complex challenge of "sustainable development" articulated at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro.

It also stemmed from an intensive consultation process, carried out within the framework of the **ISO Strategic Advisory Group on Environment (SAGE)**. SAGE was established in 1991 and brought together representatives of a variety of countries and international organizations – a total of more than 100 environmental experts – who helped to define how International Standards could support better environmental management.

As a result, the ISO 14000 family of standards for environmental management was launched to provide a practical toolbox to assist in the implementation of actions supportive to sustainable development.

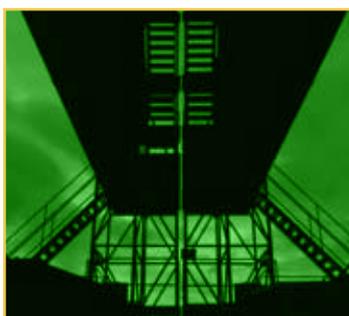
Compatibility

From its beginning, it was recognized that **ISO/TC 207** should cooperate closely with **ISO/TC 176, *Quality management and quality assurance*** – the ISO technical committee responsible for the ISO 9000 family of quality management standards – in the areas of management systems, auditing and related terminology.

Successful steps have been taken to ensure compatibility of the ISO 14001 and ISO 9001 standards to facilitate their use by organizations that wish to implement both environmental and quality management systems to benefit themselves and their customers and stakeholders. These steps include a common standard (ISO 19011) giving guidelines for auditing environmental and/or quality management systems.

Global participation

Membership of ISO/TC 207 is among the highest of any ISO technical committee and is both broad and diverse in representation, two key indicators of the worldwide interest in the work of this technical committee. National delegations of environmental experts from over 100 countries participate in ISO/TC 207, including 27 developing countries. The leadership of the committee is "twinned" between a developed and developing country (currently Canada and Brazil).



The national delegations are chosen by the national standards institute concerned and they are required to bring to ISO/TC 207 a national consensus on issues being addressed by the technical committee. This national consensus is derived from a process of consultation with interested parties and stakeholders in each country.

ISO/TC 207 continues to explore new and innovative ways to allow member countries to contribute and participate in the standards development process without increasing their carbon footprint.

ISO/TC 207 has relationships with over 30 international organizations that serve as liaison members to the technical committee. These organizations include the following :

- ✓ Asian Productivity Organization
- ✓ Confederation of European Paper Industries
- ✓ European Commission
- ✓ Environmental Defense Fund
- ✓ Global Ecolabelling Network
- ✓ International Aluminium Institute
- ✓ International Chamber of Commerce
- ✓ International Institute for Sustainable Development
- ✓ International Iron and Steel Institute
- ✓ Organisation for Economic Co-operation and Development
- ✓ Sierra Club
- ✓ United Nations Environment Programme
- ✓ World Business Council for Sustainable Development
- ✓ World Health Organization
- ✓ World Resources Institute
- ✓ World Trade Organization.

Scope of ISO/TC 207's work

Published documents and ongoing work of ISO/TC 207 address the following areas :

- ✓ Environmental management systems
- ✓ Environmental auditing and related environmental investigations
- ✓ Environmental performance evaluation
- ✓ Environmental labelling
- ✓ Life cycle assessment
- ✓ Environmental communication
- ✓ Environmental aspects of product design and development
- ✓ Environmental aspects in product standards
- ✓ Terms and definitions
- ✓ Greenhouse gas management and related activities
- ✓ Measuring the carbon footprint of products.

The ISO 14000 family of standards reflects international consensus on good environmental and business practice that can be applied by organizations all over the world in their specific context.



Overview of the ISO 14000 family of standards

Published standards

ISO 14001 is the world's most recognized framework for **environmental management systems (EMS)** – implemented from Argentina to Zimbabwe – that helps organizations both to manage better the impact of their activities on the environment and to demonstrate sound environmental management.

ISO 14001 has been adopted as a national standard by more than half of the 160 national members of ISO and its use is encouraged by governments around the world. Although certification of conformity to the standard is not a requirement of ISO 14001, at the end of 2007, at least 154 572 certificates had been issued in 148 countries and economies.

Other environmental management tools developed by ISO/TC 207 include: **ISO 14004**, which complements ISO 14001 by providing **additional guidance** and useful explanations.

Environmental audits are important tools for assessing whether an EMS is properly implemented and maintained. The **auditing** standard, **ISO 19011**, is equally useful for EMS and quality management system audits. It provides guidance on principles of auditing, managing audit programmes, the conduct of audits and on the competence of auditors.

ISO 14031 provides guidance on how an organization can evaluate its **environmental performance**. The standard also addresses the selection of suitable performance indicators, so that performance can be assessed against criteria set by management. This information can be used as a basis for internal and external reporting on environmental performance.

Communication on the environmental aspects of products and services is an important way to use market forces to influence environmental improvement.

Truthful and accurate information provides the basis on which consumers can make informed purchasing decisions.

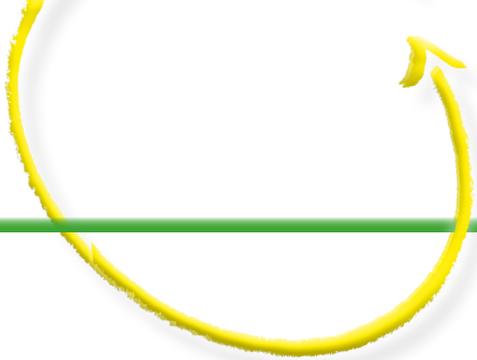
The **ISO 14020** series of standards addresses a range of different approaches to **environmental labels and declarations**, including eco-labels (seals of approval), self-declared environmental claims, and quantified environmental information about products and services.

ISO 14001 addresses not only the environmental aspects of an organization's processes, but also those of its products and services. Therefore ISO/TC 207 has developed additional tools to assist in addressing such aspects. **Life-cycle assessment (LCA)** is a tool for identifying and evaluating the environmental aspects of products and services from the "cradle to the grave": from the extraction of resource inputs to the eventual disposal of the product or its waste. The **ISO 14040** standards give guidelines on the principles and conduct of LCA studies that provide an organization with information on how to reduce the overall environmental impact of its products and services.

ISO 14064 parts 1, 2 and 3 are international **greenhouse gas (GHG) accounting and verification** standards which provide a set of clear and verifiable requirements to support organizations and proponents of GHG emission reduction projects.

ISO 14065 complements ISO 14064 by specifying requirements to **accredit** or recognize organizational bodies that undertake GHG validation or verification using ISO 14064 or other relevant standards or specifications.

ISO 14063, on **environmental communication** guidelines and examples, helps companies to make the important link to external stakeholders.



ISO Guide 64 provides guidance for addressing **environmental aspects in product standards**. Although primarily aimed at standards developers, its guidance is also useful for designers and manufacturers.

Upcoming new standards

Sustainable development policy and practice has attracted considerable attention and debate in the past 15 years. Our understanding of and concerns about environmental and sustainable development issues have also evolved over time. Just as the existing ISO 14000 standards play an important role in helping organizations to address today's priorities, so too can future standards help to address future priorities.

An integral part of an organization's EMS is the commitment to continual improvement. ISO/TC 207 takes this principle to heart and is constantly improving its process to identify and respond to new standardization needs. ISO/TC 207's success in continuing to work on relevant standards is evidenced by the development of the following new standards:

ISO 14045 will provide principles and requirements for **eco-efficiency assessment**. Eco-efficiency relates environmental performance to value created. The standard will establish an internationally standardized methodological framework for eco-efficiency assessment, thus supporting a comprehensive, understandable and transparent presentation of eco-efficiency measures.

ISO 14051 will provide guidelines for general principles and framework of **material flow cost accounting (MFCA)**. MFCA is a management tool to promote effective resource utilization, mainly in manufacturing and distribution processes, in order to reduce the relative consumption of resources and material costs.

MFCA measures the flow and stock of materials and energy within an organization based on physical unit (weight, capacity, volume and so on) and evaluates them according to manufacturing costs, a factor which is generally overlooked by conventional cost accounting. MFCA is one of the major tools of environmental management accounting (EMA) and is oriented to internal use within an organization.

ISO 14067 on the **carbon footprint of products** will provide requirements for the quantification and communication of greenhouse gases (GHGs) associated with products. The purpose of each part will be to: quantify the carbon footprint (Part 1); and harmonize methodologies for communicating the carbon footprint information and also provide guidance for this communication (Part 2).

ISO 14069 will provide guidance for organizations **to calculate the carbon footprint** of their products, services and supply chain.

ISO 14005 will provide guidelines for the **phased implementation of an EMS** to facilitate the take-up of EMS by small and medium-sized enterprises. It will include the use of environmental performance evaluation. **ISO 14006** will provide guidelines on **eco-design**.

ISO 14033 will provide guidelines and examples for compiling and communicating **quantitative environmental information**.

Finally, **ISO 14066** will specify **competency requirements** for greenhouse gas validators and verifiers.

The development programme of ISO/TC 207 is constantly evolving, driven by market needs. Hence the above is a small sample of areas where standards are currently in development. Please consult **www.iso.org** for an up-to-date programme of standards under development by ISO/TC 207.

Environmental and economic benefits

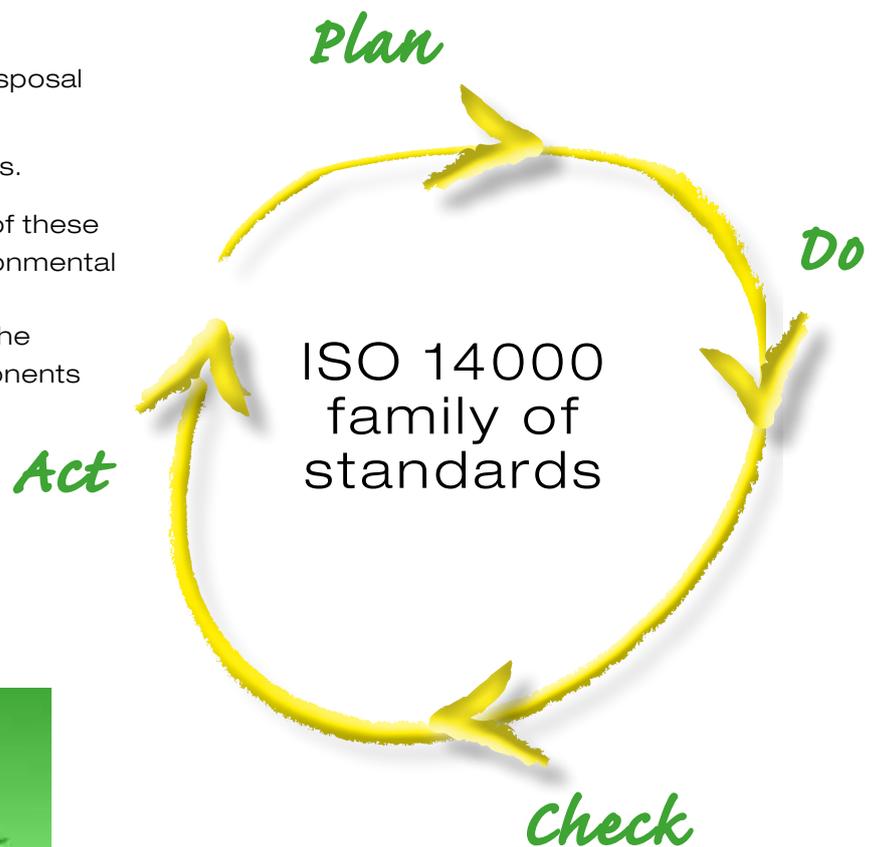
Although the ISO 14000 standards are designed to be mutually supportive, they can also be used independently of each other to achieve environmental goals. The whole ISO 14000 family of standards provides management tools for organizations to manage their environmental aspects and assess their environmental performance. Together, these tools can provide significant tangible economic benefits, including the following :

- ✓ Reduced raw material/resource use
- ✓ Reduced energy consumption
- ✓ Improved process efficiency
- ✓ Reduced waste generation and disposal costs
- ✓ Utilization of recoverable resources.

Of course, associated with each of these economic benefits are distinct environmental benefits too. This is the contribution that the ISO 14000 series makes to the environmental and economic components of sustainable development and the triple bottom line.

The ISO 14000 family and the PDCA cycle

The ISO 14000 family is designed to be implemented according to the same Plan-Do-Check-Act (PDCA) cycle underlying all ISO management systems standards. The following table classifies the standards making up the ISO 14000 family according to their optimal place in the PDCA cycle.



Acronyms: **DIS** (Draft International Standard); **TR** (Technical Report); **TS** (Technical Specification); **AWI** (Approved Work item); **WD** (Working Draft); **CD** (Committee Draft).

<i>Plan</i>	<i>Do</i>	<i>Check</i>	<i>Act</i>
Environmental management system implementation	Conduct life cycle assessment and manage environmental aspects	Conduct audits and evaluate environmental performance	Communicate and use environmental declarations and claims
ISO 14050:2009 Environmental management – Vocabulary	ISO 14040:2006 Environmental management – Life cycle assessment – Principles and framework	ISO 14015:2001 Environmental management – Environmental assessment of sites and organizations (EASO)	ISO 14020:2000 Environmental labels and declarations – General principles
ISO 14001:2004 Environmental management systems – Requirements with guidance for use	ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines	ISO 14031:1999 Environmental management – Environmental performance evaluation – Guidelines	ISO 14021:1999 Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)
ISO 14004:2004 Environmental management systems – General guidelines on principles, systems and support techniques	ISO/TR 14047:2003 Environmental management – Life cycle impact assessment – Examples of application of ISO 14042	ISO 19011:2002 Guidelines for quality and/or environmental management systems auditing	ISO 14024:1999 Environmental labels and declarations – Type I environmental labelling – Principles and procedures
ISO/DIS 14005 Environmental management systems – Guidelines for the phased implementation of an environmental management system, including the use of environmental performance evaluation	ISO/TS 14048:2002 Environmental management – Life cycle assessment – Data documentation format		ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
			ISO/AWI 14033 Environmental management – Quantitative environmental information – Guidelines and examples
Address environmental aspects in products and product standards		Evaluate greenhouse gas performance	
ISO Guide 64:2008 Guide for addressing environmental issues in product standards	ISO/TR 14049:2000 Environmental management – Life cycle assessment – Examples of application of ISO 14041 to goal and scope definition and inventory analysis	ISO 14064-3:2006 Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions	ISO 14063:2006 Environmental management – Environmental communication – Guidelines and examples

<i>Plan</i>	<i>Do</i>	<i>Check</i>	<i>Act</i>
<p>ISO/CD 14006 Environmental management systems – Guidelines on eco-design</p>	<p>ISO/CD 14051 Environmental management – Material flow cost accounting – General principles and framework</p>	<p>ISO 14065:2007 Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition</p>	
	<p>ISO/WD 14045 Eco-efficiency assessment – Principles and requirements</p>		
	<p>Manage greenhouse gases</p>		
<p>ISO/TR 14062:2002 Environmental management – Integrating environmental aspects into product design and development</p>	<p>ISO 14064-1:2006 Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals</p>	<p>ISO/CD 14066 Greenhouse gases – Competency requirements for greenhouse gas validators and verifiers document</p>	
	<p>ISO 14064-2:2006 Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements</p>		
	<p>ISO/WD 14067-1 Carbon footprint of products – Part 1: Quantification</p> <p>ISO/WD 14067-2 Carbon footprint of products – Part 2: Communication</p>		
	<p>ISO/AWI 14069 GHG – Quantification and reporting of GHG emissions for organizations (Carbon footprint of organization) – Guidance for the application of ISO 14064-1</p>		

For further information



Web sites

ISO :
www.iso.org

ISO/TC 207 :
www.tc207.org

Information on the ISO 14000 standards is also available from ISO's national member bodies

- www.iso.org/isomembers –
- and from the ISO Web site
- www.iso.org/managementstandards

Sales enquiries should be directed to the ISO members or to the ISO Central Secretariat sales department

- sales@iso.org

ISO publishes ***ISO Focus+ magazine*** (launched in January 2010) – www.iso.org/isofocus+ – which gives an overview of ISO and its standards and also includes articles on its management standards. It is published 10 times a year in English and French editions.



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