MALAYSIAN STANDARD

MS ISO 14001:2015

Environmental management systems - Requirements with guidance for use (Second revision) (ISO 14001:2015, IDT)

ICS: 13.020.10

Descriptors: guidelines, requirements, environmental management systems

DEPARTMENT OF STANDARDS MALAYSIA

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Committee representation

The Industry Standards Committee on Environmental Management (ISC Z) under whose authority this Malaysian Standard was adopted, comprises representatives from the following organisations:

Association of Consulting Engineers Malaysia
Association of Environmental Consultants and Companies of Malaysia
Centre for Environment Technology and Development Malaysia
Department of Environment
Department of Standards Malaysia
Environmental Management and Research Association of Malaysia
Federation of Malaysian Manufacturers
Malaysian Industry-Government Group for High Technology
Malaysian Institute of Chemistry
Malaysian International Chamber of Commerce and Industry
Malaysian Palm Oil Council
Malaysian Plastics Manufacturers Association
Malaysian Rubber Board
Malaysian Rubber Glove Manufacturer's Association
Malaysian Textile Manufacturers Association
Ministry of Domestic Trade, Co-operatives and Consumerism
Ministry of Energy, Green Technology and Water
Ministry of Natural Resources and Environment
Ministry of Plantation Industries and Commodities
Ministry of Science, Technology and Innovation
SIRIM Berhad (Energy and Environment Flagship)
SIRIM Berhad (Secretariat)
The Electrical and Electronics Association of Malaysia
The Institution of Engineers, Malaysia
Universiti Malaya
Universiti Putra Malaysia

The Technical Committee on Environmental Management Systems and Environmental Auditing and Related Environmental Investigations which recommended the adoption of the ISO Standard as Malaysian Standard consists of representatives from the following organisations:

Business Council for Sustainability and Responsibility Malaysia

Centre for Environment Technology and Development Malaysia

Environmental Management and Research Association of Malaysia

Federation of Malaysian Manufacturers

Forest Research Institute Malaysia

Institute of Quality Malaysia

Malaysian International Chamber of Commerce and Industry

Malaysian Palm Oil Board

Malaysian Timber Council

Malaysian Wood Industries Association

Ministry of Natural Resources and Environment

SIRIM Berhad (Environmental Technology Research Centre)

SIRIM Berhad (Secretariat)

SIRIM QAS International Sdn Bhd

National foreword

The adoption of the ISO Standard as a Malaysian Standard was recommended by the Technical Committee on Environmental Management Systems and Environmental Auditing and Related Environmental Investigations under the authority of the Industry Standards Committee on Environmental Management.

This Malaysian Standard is identical with ISO 14001:2015, *Environmental management systems - Requirements with guidance for use*, published by the International Organization for Standardization (ISO). However, for the purposes of this Malaysian Standard, the following apply:

a) in the source text, "this International Standard" should read "this Malaysian Standard"; and

b) the comma which is used as a decimal sign (if any), to read as a point.

This Malaysian Standard cancels and replaces MS ISO 14001:2004, *Environmental management systems - Requirements with guidance for use (First revision)*.

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

NOTE. IDT on the front cover indicates an identical standard i.e. a standard where the technical content, structure, and wording (or is an identical translation) of a Malaysian Standard is exactly the same as in an International Standard or is identical in technical content and structure although it may contain the minimal editorial changes specified in clause 4.2 of ISO/IEC Guide 21-1.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 1, *Environmental management systems*.

This third edition cancels and replaces the second edition (ISO 14001:2004), which has been technically revised. It also incorporates the Technical Corrigendum ISO 14001:2004/Cor.1:2009.

Introduction

0.1 Background

Achieving a balance between the environment, society and the economy is considered essential to meet the needs of the present without compromising the ability of future generations to meet their needs. Sustainable development as a goal is achieved by balancing the three pillars of sustainability.

Societal expectations for sustainable development, transparency and accountability have evolved with increasingly stringent legislation, growing pressures on the environment from pollution, inefficient use of resources, improper waste management, climate change, degradation of ecosystems and loss of biodiversity.

This has led organizations to adopt a systematic approach to environmental management by implementing environmental management systems with the aim of contributing to the environmental pillar of sustainability.

0.2 Aim of an environmental management system

The purpose of this International Standard is to provide organizations with a framework to protect the environment and respond to changing environmental conditions in balance with socio-economic needs. It specifies requirements that enable an organization to achieve the intended outcomes it sets for its environmental management system.

A systematic approach to environmental management can provide top management with information to build success over the long term and create options for contributing to sustainable development by:

— protecting the environment by preventing or mitigating adverse environmental impacts;

— mitigating the potential adverse effect of environmental conditions on the organization;

— assisting the organization in the fulfilment of compliance obligations;

— enhancing environmental performance;

— controlling or influencing the way the organization's products and services are designed, manufactured, distributed, consumed and disposed by using a life cycle perspective that can prevent environmental impacts from being unintentionally shifted elsewhere within the life cycle;

— achieving financial and operational benefits that can result from implementing environmentally sound alternatives that strengthen the organization's market position;

— communicating environmental information to relevant interested parties.

This International Standard, like other International Standards, is not intended to increase or change an organization's legal requirements.

0.3 Success factors

The success of an environmental management system depends on commitment from all levels and functions of the organization, led by top management. Organizations can leverage opportunities to prevent or mitigate adverse environmental impacts and enhance beneficial environmental impacts, particularly those with strategic and competitive implications. Top management can effectively address its risks and opportunities by integrating environmental management into the organization's business processes, strategic direction and decision making, aligning them with other business priorities, and incorporating environmental governance into its overall management system. Demonstration of successful implementation of this International Standard can be used to assure interested parties that an effective environmental management system is in place.

Adoption of this International Standard, however, will not in itself guarantee optimal environmental outcomes. Application of this International Standard can differ from one organization to another

due to the context of the organization. Two organizations can carry out similar activities but can have different compliance obligations, commitments in their environmental policy, environmental technologies and environmental performance goals, yet both can conform to the requirements of this International Standard.

The level of detail and complexity of the environmental management system will vary depending on the context of the organization, the scope of its environmental management system, its compliance obligations, and the nature of its activities, products and services, including its environmental aspects and associated environmental impacts.

0.4 Plan-Do-Check-Act model

The basis for the approach underlying an environmental management system is founded on the concept of Plan-Do-Check-Act (PDCA). The PDCA model provides an iterative process used by organizations to achieve continual improvement. It can be applied to an environmental management system and to each of its individual elements. It can be briefly described as follows.

— Plan: establish environmental objectives and processes necessary to deliver results in accordance with the organization's environmental policy.

— Do: implement the processes as planned.

— Check: monitor and measure processes against the environmental policy, including its commitments, environmental objectives and operating criteria, and report the results.

— Act: take actions to continually improve.

Figure 1 shows how the framework introduced in this International Standard could be integrated into a PDCA model, which can help new and existing users to understand the importance of a systems approach.

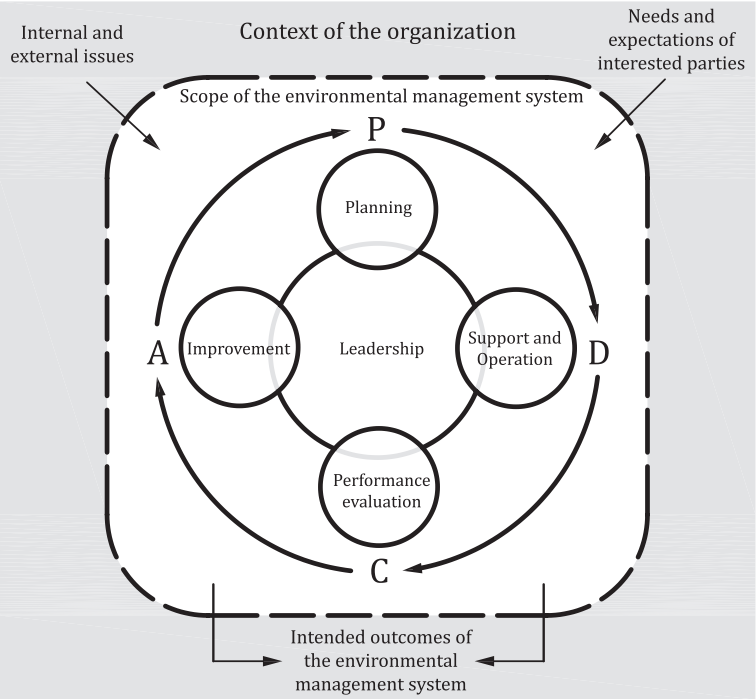

Figure 1 — Relationship between PDCA and the framework in this International Standard

0.5 Contents of this International Standard

This International Standard conforms to ISO's requirements for management system standards. These requirements include a high level structure, identical core text, and common terms with core definitions, designed to benefit users implementing multiple ISO management system standard.

This International Standard does not include requirements specific to other management systems, such as those for quality, occupational health and safety, energy or financial management. However, this International Standard enables an organization to use a common approach and risk-based thinking to integrate its environmental management system with the requirements of other management systems.

This International Standard contains the requirements used to assess conformity. An organization that wishes to demonstrate conformity with this International Standard can do so by:

— making a self-determination and self-declaration, or

— seeking confirmation of its conformance by parties having an interest in the organization, such as customers, or

— seeking confirmation of its self-declaration by a party external to the organization, or

— seeking certification/registration of its environmental management system by an external organization.

Annex A provides explanatory information to prevent misinterpretation of the requirements of this International Standard. Annex B shows broad technical correspondence between the previous edition of this International Standard and this edition. Implementation guidance on environmental management systems is included in ISO 14004.

In this International Standard, the following verbal forms are used:

— "shall" indicates a requirement;

— "should" indicates a recommendation;

— "may" indicates a permission;

— "can" indicates a possibility or a capability.

Information marked as "NOTE" is intended to assist the understanding or use of the document. "Notes to entry" used in Clause 3 provide additional information that supplements the terminological data and can contain provisions relating to the use of a term.

The terms and definitions in Clause 3 are arranged in conceptual order, with an alphabetical index provided at the end of the document.

Environmental management systems — Requirements with guidance for use

1 Scope

This International Standard specifies the requirements for an environmental management system that an organization can use to enhance its environmental performance. This International Standard is intended for use by an organization seeking to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability.

This International Standard helps an organization achieve the intended outcomes of its environmental management system, which provide value for the environment, the organization itself and interested parties. Consistent with the organization's environmental policy, the intended outcomes of an environmental management system include:

— enhancement of environmental performance;

— fulfilment of compliance obligations;

— achievement of environmental objectives.

This International Standard is applicable to any organization, regardless of size, type and nature, and applies to the environmental aspects of its activities, products and services that the organization determines it can either control or influence considering a life cycle perspective. This International Standard does not state specific environmental performance criteria.

This International Standard can be used in whole or in part to systematically improve environmental management. Claims of conformity to this International Standard, however, are not acceptable unless all its requirements are incorporated into an organization's environmental management system and fulfilled without exclusion.

2 Normative references

There are no normative references.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Terms related to organization and leadership

3.1.1
management system
set of interrelated or interacting elements of an *organization* (3.1.4) to establish policies and *objectives* (3.2.5) and *processes* (3.3.5) to achieve those objectives

Note 1 to entry: A management system can address a single discipline or several disciplines (e.g. quality, environment, occupational health and safety, energy, financial management).

Note 2 to entry: The system elements include the organization's structure, roles and responsibilities, planning and operation, performance evaluation and improvement.

Note 3 to entry: The scope of a management system can include the whole of the organization, specific and identified functions of the organization, specific and identified sections of the organization, or one or more functions across a group of organizations.

3.1.2
environmental management system
part of the *management system* (3.1.1) used to manage *environmental aspects* (3.2.2), fulfil *compliance obligations* (3.2.9), and address *risks and opportunities* (3.2.11)

3.1.3
environmental policy
intentions and direction of an *organization* (3.1.4) related to *environmental performance* (3.4.11), as formally expressed by its *top management* (3.1.5)

3.1.4
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its *objectives* (3.2.5)

Note 1 to entry: The concept of organization includes, but is not limited to sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.

3.1.5
top management
person or group of people who directs and controls an *organization* (3.1.4) at the highest level

Note 1 to entry: Top management has the power to delegate authority and provide resources within the organization.

Note 2 to entry: If the scope of the *management system* (3.1.1) covers only part of an organization, then top management refers to those who direct and control that part of the organization.

3.1.6
interested party
person or *organization* (3.1.4) that can affect, be affected by, or perceive itself to be affected by a decision or activity

EXAMPLE Customers, communities, suppliers, regulators, non-governmental organizations, investors and employees.

Note 1 to entry: To "perceive itself to be affected" means the perception has been made known to the organization.

3.2 Terms related to planning

3.2.1
environment
surroundings in which an *organization* (3.1.4) operates, including air, water, land, natural resources, flora, fauna, humans and their interrelationships

Note 1 to entry: Surroundings can extend from within an organization to the local, regional and global system.

Note 2 to entry: Surroundings can be described in terms of biodiversity, ecosystems, climate or other characteristics.

3.2.2
environmental aspect
element of an *organization's* (3.1.4) activities or products or services that interacts or can interact with the *environment* (3.2.1)

Note 1 to entry: An environmental aspect can cause (an) *environmental impact(s)* (3.2.4). A significant environmental aspect is one that has or can have one or more significant environmental impact(s).

Note 2 to entry: Significant environmental aspects are determined by the organization applying one or more criteria.

3.2.3
environmental condition
state or characteristic of the *environment* (3.2.1) as determined at a certain point in time

3.2.4
environmental impact
change to the *environment* (3.2.1), whether adverse or beneficial, wholly or partially resulting from an *organization's* (3.1.4) *environmental aspects* (3.2.2)

3.2.5
objective
result to be achieved

Note 1 to entry: An objective can be strategic, tactical, or operational.

Note 2 to entry: Objectives can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product, service and *process* (3.3.5)).

Note 3 to entry: An objective can be expressed in other ways, e.g. as an intended outcome, a purpose, an operational criterion, as an *environmental objective* (3.2.6), or by the use of other words with similar meaning (e.g. aim, goal, or target).

3.2.6
environmental objective
objective (3.2.5) set by the *organization* (3.1.4) consistent with its *environmental policy* (3.1.3)

3.2.7
prevention of pollution
use of *processes* (3.3.5), practices, techniques, materials, products, services or energy to avoid, reduce or control (separately or in combination) the creation, emission or discharge of any type of pollutant or waste, in order to reduce adverse *environmental impacts* (3.2.4)

Note 1 to entry: Prevention of pollution can include source reduction or elimination; process, product or service changes; efficient use of resources; material and energy substitution; reuse; recovery; recycling, reclamation; or treatment.

3.2.8
requirement
need or expectation that is stated, generally implied or obligatory

Note 1 to entry: "Generally implied" means that it is custom or common practice for the *organization* (3.1.4) and *interested parties* (3.1.6) that the need or expectation under consideration is implied.

Note 2 to entry: A specified requirement is one that is stated, for example in *documented information* (3.3.2).

Note 3 to entry: Requirements other than legal requirements become obligatory when the organization decides to comply with them.

3.2.9
compliance obligations (preferred term)
legal requirements and other requirements (admitted term)
legal *requirements* (3.2.8) that an *organization* (3.1.4) has to comply with and other requirements that an organization has to or chooses to comply with

Note 1 to entry: Compliance obligations are related to the *environmental management system* (3.1.2).

Note 2 to entry: Compliance obligations can arise from mandatory requirements, such as applicable laws and regulations, or voluntary commitments, such as organizational and industry standards, contractual relationships, codes of practice and agreements with community groups or non-governmental organizations.

3.2.10
risk
effect of uncertainty

Note 1 to entry: An effect is a deviation from the expected — positive or negative.

Note 2 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.

Note 3 to entry: Risk is often characterized by reference to potential *"events"* (as defined in ISO Guide 73:2009, 3.5.1.3) and *"consequences"* (as defined in ISO Guide 73:2009, 3.6.1.3), or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated *"likelihood"* (as defined in ISO Guide 73:2009, 3.6.1.1) of occurrence.

3.2.11
risks and opportunities
potential adverse effects (threats) and potential beneficial effects (opportunities)

3.3 Terms related to support and operation

3.3.1
competence
ability to apply knowledge and skills to achieve intended results

3.3.2
documented information
information required to be controlled and maintained by an *organization* (3.1.4) and the medium on which it is contained

Note 1 to entry: Documented information can be in any format and media, and from any source.

Note 2 to entry: Documented information can refer to:

— the *environmental management system* (3.1.2), including related *processes* (3.3.5);

— information created in order for the organization to operate (can be referred to as documentation);

— evidence of results achieved (can be referred to as records).

3.3.3
life cycle
consecutive and interlinked stages of a product (or service) system, from raw material acquisition or generation from natural resources to final disposal

Note 1 to entry: The life cycle stages include acquisition of raw materials, design, production, transportation/ delivery, use, end-of-life treatment and final disposal.

[SOURCE: ISO 14044:2006, 3.1, modified — The words "(or service)" have been added to the definition and Note 1 to entry has been added.]

3.3.4
outsource (verb)
make an arrangement where an external *organization* (3.1.4) performs part of an organization's function or *process* (3.3.5)

Note 1 to entry: An external organization is outside the scope of the *management system* (3.1.1), although the outsourced function or process is within the scope.

3.3.5
process
set of interrelated or interacting activities which transforms inputs into outputs

Note 1 to entry: A process can be documented or not.

3.4 Terms related to performance evaluation and improvement

3.4.1
audit
systematic, independent and documented *process* (3.3.5) for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled

Note 1 to entry: An internal audit is conducted by the *organization* (3.1.4) itself, or by an external party on its behalf.

Note 2 to entry: An audit can be a combined audit (combining two or more disciplines).

Note 3 to entry: Independence can be demonstrated by the freedom from responsibility for the activity being audited or freedom from bias and conflict of interest.

Note 4 to entry: "Audit evidence" consists of records, statements of fact or other information which are relevant to the audit criteria and are verifiable; and "audit criteria" are the set of policies, procedures or *requirements* (3.2.8) used as a reference against which audit evidence is compared, as defined in ISO 19011:2011, 3.3 and 3.2 respectively.

3.4.2
conformity
fulfilment of a *requirement* (3.2.8)

3.4.3
nonconformity
non-fulfilment of a *requirement* (3.2.8)

Note 1 to entry: Nonconformity relates to requirements in this International Standard and additional *environmental management system* (3.1.2) requirements that an *organization* (3.1.4) establishes for itself.

3.4.4
corrective action
action to eliminate the cause of a *nonconformity* (3.4.3) and to prevent recurrence

Note 1 to entry: There can be more than one cause for a nonconformity.

3.4.5
continual improvement
recurring activity to enhance *performance* (3.4.10)

Note 1 to entry: Enhancing performance relates to the use of the *environmental management system* (3.1.2) to enhance *environmental performance* (3.4.11) consistent with the *organization's* (3.1.4) *environmental policy* (3.1.3).

Note 2 to entry: The activity need not take place in all areas simultaneously, or without interruption.

3.4.6
effectiveness
extent to which planned activities are realized and planned results achieved

3.4.7
indicator
measurable representation of the condition or status of operations, management or conditions

[SOURCE: ISO 14031:2013, 3.15]

3.4.8
monitoring
determining the status of a system, a *process* (3.3.5) or an activity

Note 1 to entry: To determine the status, there might be a need to check, supervise or critically observe.

3.4.9
measurement
process (3.3.5) to determine a value

3.4.10
performance
measurable result

Note 1 to entry: Performance can relate either to quantitative or qualitative findings.

Note 2 to entry: Performance can relate to the management of activities, *processes* (3.3.5), products (including services), systems or *organizations* (3.1.4).

3.4.11
environmental performance
performance (3.4.10) related to the management of *environmental aspects* (3.2.2)

Note 1 to entry: For an *environmental management system* (3.1.2), results can be measured against the *organization's* (3.1.4) *environmental policy* (3.1.3), *environmental objectives* (3.2.6) or other criteria, using *indicators* (3.4.7).

4 Context of the organization

4.1 Understanding the organization and its context

The organization shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcomes of its environmental management system. Such issues shall include environmental conditions being affected by or capable of affecting the organization.

4.2 Understanding the needs and expectations of interested parties

The organization shall determine:

a) the interested parties that are relevant to the environmental management system;

b) the relevant needs and expectations (i.e. requirements) of these interested parties;

c) which of these needs and expectations become its compliance obligations.

4.3 Determining the scope of the environmental management system

The organization shall determine the boundaries and applicability of the environmental management system to establish its scope.

When determining this scope, the organization shall consider:

a) the external and internal issues referred to in 4.1;

b) the compliance obligations referred to in 4.2;

c) its organizational units, functions and physical boundaries;

d) its activities, products and services;

e) its authority and ability to exercise control and influence.

Once the scope is defined, all activities, products and services of the organization within that scope need to be included in the environmental management system.

The scope shall be maintained as documented information and be available to interested parties.

4.4 Environmental management system

To achieve the intended outcomes, including enhancing its environmental performance, the organization shall establish, implement, maintain and continually improve an environmental management system, including the processes needed and their interactions, in accordance with the requirements of this International Standard.

The organization shall consider the knowledge gained in 4.1 and 4.2 when establishing and maintaining the environmental management system.

5 Leadership

5.1 Leadership and commitment

Top management shall demonstrate leadership and commitment with respect to the environmental management system by:

a) taking accountability for the effectiveness of the environmental management system;

b) ensuring that the environmental policy and environmental objectives are established and are compatible with the strategic direction and the context of the organization;

c) ensuring the integration of the environmental management system requirements into the organization's business processes;

d) ensuring that the resources needed for the environmental management system are available;

e) communicating the importance of effective environmental management and of conforming to the environmental management system requirements;

f) ensuring that the environmental management system achieves its intended outcomes;

g) directing and supporting persons to contribute to the effectiveness of the environmental management system;

h) promoting continual improvement;

i) supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

NOTE Reference to "business" in this International Standard can be interpreted broadly to mean those activities that are core to the purposes of the organization's existence.

5.2 Environmental policy

Top management shall establish, implement and maintain an environmental policy that, within the defined scope of its environmental management system:

a) is appropriate to the purpose and context of the organization, including the nature, scale and environmental impacts of its activities, products and services;

b) provides a framework for setting environmental objectives;

c) includes a commitment to the protection of the environment, including prevention of pollution and other specific commitment(s) relevant to the context of the organization;

NOTE Other specific commitment(s) to protect the environment can include sustainable resource use, climate change mitigation and adaptation, and protection of biodiversity and ecosystems.

d) includes a commitment to fulfil its compliance obligations;

e) includes a commitment to continual improvement of the environmental management system to enhance environmental performance.

The environmental policy shall:

— be maintained as documented information;

— be communicated within the organization;

— be available to interested parties.

5.3 Organizational roles, responsibilities and authorities

Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization.

Top management shall assign the responsibility and authority for:

a) ensuring that the environmental management system conforms to the requirements of this International Standard;

b) reporting on the performance of the environmental management system, including environmental performance, to top management.

6 Planning

6.1 Actions to address risks and opportunities

6.1.1 General

The organization shall establish, implement and maintain the process(es) needed to meet the requirements in 6.1.1 to 6.1.4.

When planning for the environmental management system, the organization shall consider:

a) the issues referred to in 4.1;

b) the requirements referred to in 4.2;

c) the scope of its environmental management system;

and determine the risks and opportunities, related to its environmental aspects (see 6.1.2), compliance obligations (see 6.1.3) and other issues and requirements, identified in 4.1 and 4.2, that need to be addressed to:

— give assurance that the environmental management system can achieve its intended outcomes;

— prevent or reduce undesired effects, including the potential for external environmental conditions to affect the organization;

— achieve continual improvement.

Within the scope of the environmental management system, the organization shall determine potential emergency situations, including those that can have an environmental impact.

The organization shall maintain documented information of its:

— risks and opportunities that need to be addressed;

— process(es) needed in 6.1.1 to 6.1.4, to the extent necessary to have confidence they are carried out as planned.

6.1.2 Environmental aspects

Within the defined scope of the environmental management system, the organization shall determine the environmental aspects of its activities, products and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective.

When determining environmental aspects, the organization shall take into account:

a) change, including planned or new developments, and new or modified activities, products and services;

b) abnormal conditions and reasonably foreseeable emergency situations.

The organization shall determine those aspects that have or can have a significant environmental impact, i.e. significant environmental aspects, by using established criteria.

The organization shall communicate its significant environmental aspects among the various levels and functions of the organization, as appropriate.

The organization shall maintain documented information of its:

— environmental aspects and associated environmental impacts;

— criteria used to determine its significant environmental aspects;

— significant environmental aspects.

NOTE Significant environmental aspects can result in risks and opportunities associated with either adverse environmental impacts (threats) or beneficial environmental impacts (opportunities).

6.1.3 Compliance obligations

The organization shall:

a) determine and have access to the compliance obligations related to its environmental aspects;

b) determine how these compliance obligations apply to the organization;

c) take these compliance obligations into account when establishing, implementing, maintaining and continually improving its environmental management system.

The organization shall maintain documented information of its compliance obligations.

NOTE Compliance obligations can result in risks and opportunities to the organization.

6.1.4 Planning action

The organization shall plan:

a) to take actions to address its:

   1) significant environmental aspects;

   2) compliance obligations;

3) risks and opportunities identified in 6.1.1;

b) how to:

1) integrate and implement the actions into its environmental management system processes (see 6.2, Clause 7, Clause 8 and 9.1), or other business processes;

2) evaluate the effectiveness of these actions (see 9.1).

When planning these actions, the organization shall consider its technological options and its financial, operational and business requirements.

6.2 Environmental objectives and planning to achieve them

6.2.1 Environmental objectives

The organization shall establish environmental objectives at relevant functions and levels, taking into account the organization's significant environmental aspects and associated compliance obligations, and considering its risks and opportunities.

The environmental objectives shall be:

a) consistent with the environmental policy;

b) measurable (if practicable);

c) monitored;

d) communicated;

e) updated as appropriate.

The organization shall maintain documented information on the environmental objectives.

6.2.2 Planning actions to achieve environmental objectives

When planning how to achieve its environmental objectives, the organization shall determine:

a) what will be done;

b) what resources will be required;

c) who will be responsible;

d) when it will be completed;

e) how the results will be evaluated, including indicators for monitoring progress toward achievement of its measurable environmental objectives (see 9.1.1).

The organization shall consider how actions to achieve its environmental objectives can be integrated into the organization's business processes.

7 Support

7.1 Resources

The organization shall determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the environmental management system.

7.2 Competence

The organization shall:

a) determine the necessary competence of person(s) doing work under its control that affects its environmental performance and its ability to fulfil its compliance obligations;

b) ensure that these persons are competent on the basis of appropriate education, training or experience;

c) determine training needs associated with its environmental aspects and its environmental management system;

d) where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken.

NOTE Applicable actions can include, for example, the provision of training to, the mentoring of, or the re-assignment of currently employed persons; or the hiring or contracting of competent persons.

The organization shall retain appropriate documented information as evidence of competence.

7.3 Awareness

The organization shall ensure that persons doing work under the organization's control are aware of:

a) the environmental policy;

b) the significant environmental aspects and related actual or potential environmental impacts associated with their work;

c) their contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance;

d) the implications of not conforming with the environmental management system requirements, including not fulfilling the organization's compliance obligations.

7.4 Communication

7.4.1 General

The organization shall establish, implement and maintain the process(es) needed for internal and external communications relevant to the environmental management system, including:

a) on what it will communicate;

b) when to communicate;

c) with whom to communicate;

d) how to communicate.

When establishing its communication process(es), the organization shall:

— take into account its compliance obligations;

— ensure that environmental information communicated is consistent with information generated within the environmental management system, and is reliable.

The organization shall respond to relevant communications on its environmental management system.

The organization shall retain documented information as evidence of its communications, as appropriate.

7.4.2 Internal communication

The organization shall:

a) internally communicate information relevant to the environmental management system among the various levels and functions of the organization, including changes to the environmental management system, as appropriate;

b) ensure its communication process(es) enable(s) persons doing work under the organization's control to contribute to continual improvement.

7.4.3 External communication

The organization shall externally communicate information relevant to the environmental management system, as established by the organization's communication process(es) and as required by its compliance obligations.

7.5 Documented information

7.5.1 General

The organization's environmental management system shall include:

a) documented information required by this International Standard;

b) documented information determined by the organization as being necessary for the effectiveness of the environmental management system.

NOTE The extent of documented information for an environmental management system can differ from one organization to another due to:

— the size of organization and its type of activities, processes, products and services;

— the need to demonstrate fulfilment of its compliance obligations;

— the complexity of processes and their interactions;

— the competence of persons doing work under the organization's control.

7.5.2 Creating and updating

When creating and updating documented information, the organization shall ensure appropriate:

a) identification and description (e.g. a title, date, author, or reference number);

b) format (e.g. language, software version, graphics) and media (e.g. paper, electronic);

c) review and approval for suitability and adequacy.

7.5.3 Control of documented information

Documented information required by the environmental management system and by this International Standard shall be controlled to ensure:

a) it is available and suitable for use, where and when it is needed;

b) it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity).

For the control of documented information, the organization shall address the following activities as applicable:

— distribution, access, retrieval and use;

— storage and preservation, including preservation of legibility;

— control of changes (e.g. version control);

— retention and disposition.

Documented information of external origin determined by the organization to be necessary for the planning and operation of the environmental management system shall be identified, as appropriate, and controlled.

NOTE Access can imply a decision regarding the permission to view the documented information only, or the permission and authority to view and change the documented information.

8 Operation

8.1 Operational planning and control

The organization shall establish, implement, control and maintain the processes needed to meet environmental management system requirements, and to implement the actions identified in 6.1 and 6.2, by:

— establishing operating criteria for the process(es);

— implementing control of the process(es), in accordance with the operating criteria.

NOTE Controls can include engineering controls and procedures. Controls can be implemented following a hierarchy (e.g. elimination, substitution, administrative) and can be used individually or in combination.

The organization shall control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

The organization shall ensure that outsourced processes are controlled or influenced. The type and extent of control or influence to be applied to the process(es) shall be defined within the environmental management system.

Consistent with a life cycle perspective, the organization shall:

a) establish controls, as appropriate, to ensure that its environmental requirement(s) is (are) addressed in the design and development process for the product or service, considering each life cycle stage;

b) determine its environmental requirement(s) for the procurement of products and services, as appropriate;

c) communicate its relevant environmental requirement(s) to external providers, including contractors;

d) consider the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.

The organization shall maintain documented information to the extent necessary to have confidence that the processes have been carried out as planned.

8.2 Emergency preparedness and response

The organization shall establish, implement and maintain the process(es) needed to prepare for and respond to potential emergency situations identified in 6.1.1.

The organization shall:

a) prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations;

b) respond to actual emergency situations;

c) take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact;

d) periodically test the planned response actions, where practicable;

e) periodically review and revise the process(es) and planned response actions, in particular after the occurrence of emergency situations or tests;

f) provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.

The organization shall maintain documented information to the extent necessary to have confidence that the process(es) is (are) carried out as planned.

9 Performance evaluation

9.1 Monitoring, measurement, analysis and evaluation

9.1.1 General

The organization shall monitor, measure, analyse and evaluate its environmental performance.

The organization shall determine:

a) what needs to be monitored and measured;

b) the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results;

c) the criteria against which the organization will evaluate its environmental performance, and appropriate indicators;

d) when the monitoring and measuring shall be performed;

e) when the results from monitoring and measurement shall be analysed and evaluated.

The organization shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained, as appropriate.

The organization shall evaluate its environmental performance and the effectiveness of the environmental management system.

The organization shall communicate relevant environmental performance information both internally and externally, as identified in its communication process(es) and as required by its compliance obligations.

The organization shall retain appropriate documented information as evidence of the monitoring, measurement, analysis and evaluation results.

9.1.2 Evaluation of compliance

The organization shall establish, implement and maintain the process(es) needed to evaluate fulfilment of its compliance obligations.

The organization shall:

a) determine the frequency that compliance will be evaluated;

b) evaluate compliance and take action if needed;

c) maintain knowledge and understanding of its compliance status.

The organization shall retain documented information as evidence of the compliance evaluation result(s).

9.2 Internal audit

9.2.1 General

The organization shall conduct internal audits at planned intervals to provide information on whether the environmental management system:

a) conforms to:

1) the organization's own requirements for its environmental management system;

2) the requirements of this International Standard;

b) is effectively implemented and maintained.

9.2.2 Internal audit programme

The organization shall establish, implement and maintain (an) internal audit programme(s), including the frequency, methods, responsibilities, planning requirements and reporting of its internal audits.

When establishing the internal audit programme, the organization shall take into consideration the environmental importance of the processes concerned, changes affecting the organization and the results of previous audits.

The organization shall:

a) define the audit criteria and scope for each audit;

b) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;

c) ensure that the results of the audits are reported to relevant management.

The organization shall retain documented information as evidence of the implementation of the audit programme and the audit results.

9.3 Management review

Top management shall review the organization's environmental management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.

The management review shall include consideration of:

a) the status of actions from previous management reviews;

b) changes in:

1) external and internal issues that are relevant to the environmental management system;

2) the needs and expectations of interested parties, including compliance obligations;

3) its significant environmental aspects;

4) risks and opportunities;

c) the extent to which environmental objectives have been achieved;

d) information on the organization's environmental performance, including trends in:

   1) nonconformities and corrective actions;

   2) monitoring and measurement results;

   3) fulfilment of its compliance obligations;

   4) audit results;

e) adequacy of resources;

f) relevant communication(s) from interested parties, including complaints;

g) opportunities for continual improvement.

The outputs of the management review shall include:

— conclusions on the continuing suitability, adequacy and effectiveness of the environmental management system;

— decisions related to continual improvement opportunities;

— decisions related to any need for changes to the environmental management system, including resources;

— actions, if needed, when environmental objectives have not been achieved;

— opportunities to improve integration of the environmental management system with other business processes, if needed;

— any implications for the strategic direction of the organization.

The organization shall retain documented information as evidence of the results of management reviews.

10 Improvement

10.1 General

The organization shall determine opportunities for improvement (see 9.1, 9.2 and 9.3) and implement necessary actions to achieve the intended outcomes of its environmental management system.

10.2 Nonconformity and corrective action

When a nonconformity occurs, the organization shall:

a) react to the nonconformity and, as applicable:

   1) take action to control and correct it;

   2) deal with the consequences, including mitigating adverse environmental impacts;

b) evaluate the need for action to eliminate the causes of the nonconformity, in order that it does not recur or occur elsewhere, by:

   1) reviewing the nonconformity;

   2) determining the causes of the nonconformity;

   3) determining if similar nonconformities exist, or could potentially occur;

c) implement any action needed;

d) review the effectiveness of any corrective action taken;

e) make changes to the environmental management system, if necessary.

Corrective actions shall be appropriate to the significance of the effects of the nonconformities encountered, including the environmental impact(s).

The organization shall retain documented information as evidence of:

— the nature of the nonconformities and any subsequent actions taken;

— the results of any corrective action.

10.3 Continual improvement

The organization shall continually improve the suitability, adequacy and effectiveness of the environmental management system to enhance environmental performance.

Annex A
(informative)

Guidance on the use of this International Standard

A.1 General

The explanatory information given in this annex is intended to prevent misinterpretation of the requirements contained in this International Standard. While this information addresses and is consistent with these requirements, it is not intended to add to, subtract from, or in any way modify them.

The requirements in this International Standard need to be viewed from a systems or holistic perspective. The user should not read a particular sentence or clause of this International Standard in isolation from other clauses. There is an interrelationship between the requirements in some clauses and the requirements in other clauses. For example, the organization needs to understand the relationship between the commitments in its environmental policy and the requirements that are specified in other clauses.

Management of change is an important part of maintaining the environmental management system that ensures the organization can achieve the intended outcomes of its environmental management system on an ongoing basis. Management of change is addressed in various requirements of this International Standard, including

— maintaining the environmental management system (see 4.4),

— environmental aspects (see 6.1.2),

— internal communication (see 7.4.2),

— operational control (see 8.1),

— internal audit programme (see 9.2.2), and

— management review (see 9.3).

As part of managing change, the organization should address planned and unplanned changes to ensure that the unintended consequences of these changes do not have a negative effect on the intended outcomes of the environmental management system. Examples of change include:

— planned changes to products, processes, operations, equipment or facilities;

— changes in staff or external providers, including contractors;

— new information related to environmental aspects, environmental impacts and related technologies;

— changes in compliance obligations.

A.2 Clarification of structure and terminology

The clause structure and some of the terminology of this International Standard have been changed to improve alignment with other management systems standards. There is, however, no requirement in this International Standard for its clause structure or terminology to be applied to an organization's environmental management system documentation. There is no requirement to replace the terms used by an organization with the terms used in this International Standard. Organizations can choose to use terms that suit their business, e.g. "records", "documentation", or "protocols", rather than "documented information".

A.3 Clarification of concepts

In addition to the terms and definitions given in Clause 3, clarification of selected concepts is provided below to prevent misunderstanding.

— In this International Standard, the use of the word "any" implies selection or choice.

— The words "appropriate" and "applicable" are not interchangeable. "Appropriate" means suitable (for, to) and implies some degree of freedom, while "applicable" means relevant or possible to apply and implies that if it can be done, it needs to be done.

— The word "consider" means it is necessary to think about the topic but it can be excluded; whereas "take into account" means it is necessary to think about the topic but it cannot be excluded.

— "Continual" indicates duration that occurs over a period of time, but with intervals of interruption (unlike "continuous" which indicates duration without interruption). "Continual" is therefore the appropriate word to use when referring to improvement.

— In this International Standard, the word "effect" is used to describe the result of a change to the organization. The phrase "environmental impact" refers specifically to the result of a change to the environment.

— The word "ensure" means the responsibility can be delegated, but not the accountability.

— This International Standard uses the term "interested party"; the term "stakeholder" is a synonym as it represents the same concept.

This International Standard uses some new terminology. A brief explanation is given below to aid both new users and those who have used previous editions of this International Standard.

— The phrase "compliance obligations" replaces the phrase "legal requirements and other requirements to which the organization subscribes" used in the previous edition of this International Standard. The intent of this new phrase does not differ from that of the previous edition.

— "Documented information" replaces the nouns "documentation", "documents" and "records" used in previous editions of this International Standard. To distinguish the intent of the generic term "documented information", this International Standard now uses the phrase "retain documented information as evidence of...." to mean records, and "maintain documented information" to mean documentation other than records. The phrase "as evidence of...." is not a requirement to meet legal evidentiary requirements; its intent is only to indicate objective evidence needs to be retained.

— The phrase "external provider" means an external supplier organization (including a contractor) that provides a product or a service.

— The change from "identify" to "determine" is intended to harmonize with the standardized management system terminology. The word "determine" implies a discovery process that results in knowledge. The intent does not differ from that of previous editions.

— The phrase "intended outcome" is what the organization intends to achieve by implementing its environmental management system. The minimal intended outcomes include enhancement of environmental performance, fulfilment of compliance obligations and achievement of environmental objectives. Organizations can set additional intended outcomes for their environmental management system. For example, consistent with their commitment to protection of the environment, an organization may establish an intended outcome to work towards sustainable development.

— The phrase "person(s) doing work under its control" includes persons working for the organization and those working on its behalf for which the organization has responsibility (e.g. contractors). It replaces the phrase "persons working for it or on its behalf" and "persons working for or on behalf of the organization" used in the previous edition of this International Standard. The intent of this new phrase does not differ from that of the previous edition.

— The concept of "target" used in previous editions of this International Standard is captured within the term "environmental objective".

A.4 Context of the organization

A.4.1 Understanding the organization and its context

The intent of 4.1 is to provide a high-level, conceptual understanding of the important issues that can affect, either positively or negatively, the way the organization manages its environmental responsibilities. Issues are important topics for the organization, problems for debate and discussion or changing circumstances that affect the organization's ability to achieve the intended outcomes it sets for its environmental management system.

Examples of internal and external issues which can be relevant to the context of the organization include:

a) environmental conditions related to climate, air quality, water quality, land use, existing contamination, natural resource availability and biodiversity, that can either affect the organization's purpose, or be affected by its environmental aspects;

b) the external cultural, social, political, legal, regulatory, financial, technological, economic, natural and competitive circumstances, whether international, national, regional or local;

c) the internal characteristics or conditions of the organization, such as its activities, products and services, strategic direction, culture and capabilities (i.e. people, knowledge, processes, systems).

An understanding of the context of an organization is used to establish, implement, maintain and continually improve its environmental management system (see 4.4). The internal and external issues that are determined in 4.1 can result in risks and opportunities to the organization or to the environmental management system (see 6.1.1 to 6.1.3). The organization determines those that need to be addressed and managed (see 6.1.4, 6.2, Clause 7, Clause 8 and 9.1).

A.4.2 Understanding the needs and expectations of interested parties

An organization is expected to gain a general (i.e. high-level, not detailed) understanding of the expressed needs and expectations of those internal and external interested parties that have been determined by the organization to be relevant. The organization considers the knowledge gained when determining which of these needs and expectations it has to or it chooses to comply with, i.e. its compliance obligations (see 6.1.1).

In the case of an interested party perceiving itself to be affected by the organization's decisions or activities related to environmental performance, the organization considers the relevant needs and expectations that are made known or have been disclosed by the interested party to the organization.

Interested party requirements are not necessarily requirements of the organization. Some interested party requirements reflect needs and expectations that are mandatory because they have been incorporated into laws, regulations, permits and licences by governmental or even court decision. The organization may decide to voluntarily agree to or adopt other requirements of interested parties (e.g. entering into a contractual relationship, subscribing to a voluntary initiative). Once the organization adopts them, they become organizational requirements (i.e. compliance obligations) and are taken into account when planning the environmental management system (see 4.4). A more detailed-level analysis of its compliance obligations is performed in 6.1.3.

A.4.3 Determining the scope of the environmental management system

The scope of the environmental management system is intended to clarify the physical and organizational boundaries to which the environmental management system applies, especially if the organization is a part of a larger organization. An organization has the freedom and flexibility to define its boundaries. It may choose to implement this International Standard throughout the entire

organization, or only in (a) specific part(s) of the organization, as long as the top management for that (those) part(s) has authority to establish an environmental management system.

In setting the scope, the credibility of the environmental management system depends upon the choice of organizational boundaries. The organization considers the extent of control or influence that it can exert over activities, products and services considering a life cycle perspective. Scoping should not be used to exclude activities, products, services, or facilities that have or can have significant environmental aspects, or to evade its compliance obligations. The scope is a factual and representative statement of the organization's operations included within its environmental management system boundaries that should not mislead interested parties.

Once the organization asserts it conforms to this International Standard, the requirement to make the scope statement available to interested parties applies.

A.4.4 Environmental management system

The organization retains authority and accountability to decide how it fulfils the requirements of this International Standard, including the level of detail and extent to which it:

a) establishes one or more processes to have confidence that it (they) is (are) controlled, carried out as planned and achieve the desired results;

b) integrates environmental management system requirements into its various business processes, such as design and development, procurement, human resources, sales and marketing;

c) incorporates issues associated with the context of the organization (see 4.1) and interested party requirements (see 4.2) within its environmental management system.

If this International Standard is implemented for (a) specific part(s) of an organization, policies, processes and documented information developed by other parts of the organization can be used to meet the requirements of this International Standard, provided they are applicable to that (those) specific part(s).

For information on maintaining the environmental management system as part of management of change, see Clause A.1.

A.5 Leadership

A.5.1 Leadership and commitment

To demonstrate leadership and commitment, there are specific responsibilities related to the environmental management system in which top management should be personally involved or which top management should direct. Top management may delegate responsibility for these actions to others, but it retains accountability for ensuring the actions are performed.

A.5.2 Environmental policy

An environmental policy is a set of principles stated as commitments in which top management outlines the intentions of the organization to support and enhance its environmental performance. The environmental policy enables the organization to set its environmental objectives (see 6.2), take actions to achieve the intended outcomes of the environmental management system, and achieve continual improvement (see Clause 10).

Three basic commitments for the environmental policy are specified in this International Standard to:

a) protect the environment;

b) fulfil the organization's compliance obligations;

c) continually improve the environmental management system to enhance environmental performance.

These commitments are then reflected in the processes an organization establishes to address specific requirements in this International Standard, to ensure a robust, credible and reliable environmental management system.

The commitment to protect the environment is intended to not only prevent adverse environmental impacts through prevention of pollution, but to protect the natural environment from harm and degradation arising from the organization's activities, products and services. The specific commitment(s) an organization pursues should be relevant to the context of the organization, including the local or regional environmental conditions. These commitments can address, for example, water quality, recycling, or air quality, and can also include commitments related to climate change mitigation and adaptation, protection of biodiversity and ecosystems, and restoration.

While all the commitments are important, some interested parties are especially concerned with the organization's commitment to fulfil its compliance obligations, particularly applicable legal requirements. This International Standard specifies a number of interconnected requirements related to this commitment. These include the need to:

— determine compliance obligations;

— ensure operations are carried out in accordance with these compliance obligations;

— evaluate fulfilment of the compliance obligations;

— correct nonconformities.

A.5.3 Organizational roles, responsibilities and authorities

Those involved in the organization's environmental management system should have a clear understanding of their role, responsibility(ies) and authority(ies) for conforming to the requirements of this International Standard and achieving the intended outcomes.

The specific roles and responsibilities identified in 5.3 may be assigned to an individual, sometimes referred to as the "management representative", shared by several individuals, or assigned to a member of top management.

A.6 Planning

A.6.1 Actions to address risks and opportunities

A.6.1.1 General

The overall intent of the process(es) established in 6.1.1 is to ensure that the organization is able to achieve the intended outcomes of its environmental management system, to prevent or reduce undesired effects, and to achieve continual improvement. The organization can ensure this by determining its risks and opportunities that need to be addressed and planning action to address them. These risks and opportunities can be related to environmental aspects, compliance obligations, other issues or other needs and expectations of interested parties.

Environmental aspects (see 6.1.2) can create risks and opportunities associated with adverse environmental impacts, beneficial environmental impacts, and other effects on the organization. The risks and opportunities related to environmental aspects can be determined as part of the significance evaluation or determined separately.

Compliance obligations (see 6.1.3) can create risks and opportunities, such as failing to comply (which can damage the organization's reputation or result in legal action) or performing beyond its compliance obligations (which can enhance the organization's reputation).

The organization can also have risks and opportunities related to other issues, including environmental conditions or needs and expectations of interested parties, which can affect the organization's ability to achieve the intended outcomes of its environmental management system, e.g.

a) environmental spillage due to literacy or language barriers among workers who cannot understand local work procedures;

b) increased flooding due to climate change that could affect the organizations premises;

c) lack of available resources to maintain an effective environmental management system due to economic constraints;

d) introducing new technology financed by governmental grants, which could improve air quality;

e) water scarcity during periods of drought that could affect the organization's ability to operate its emission control equipment.

Emergency situations are unplanned or unexpected events that need the urgent application of specific competencies, resources or processes to prevent or mitigate their actual or potential consequences. Emergency situations can result in adverse environmental impacts or other effects on the organization. When determining potential emergency situations (e.g. fire, chemical spill, severe weather), the organization should consider:

— the nature of onsite hazards (e.g. flammable liquids, storage tanks, compressed gasses);

— the most likely type and scale of an emergency situation;

— the potential for emergency situations at a nearby facility (e.g. plant, road, railway line).

Although risks and opportunities need to be determined and addressed, there is no requirement for formal risk management or a documented risk management process. It is up to the organization to select the method it will use to determine its risks and opportunities. The method may involve a simple qualitative process or a full quantitative assessment depending on the context in which the organization operates.

The risks and opportunities identified (see 6.1.1 to 6.1.3) are inputs for planning actions (see 6.1.4) and for establishing the environmental objectives (see 6.2).

A.6.1.2 Environmental aspects

An organization determines its environmental aspects and associated environmental impacts, and determines those that are significant and, therefore, need to be addressed by its environmental management system.

Changes to the environment, either adverse or beneficial, that result wholly or partially from environmental aspects are called environmental impacts. The environmental impact can occur at local, regional and global scales, and also can be direct, indirect or cumulative by nature. The relationship between environmental aspects and environmental impacts is one of cause and effect.

When determining environmental aspects, the organization considers a life cycle perspective. This does not require a detailed life cycle assessment; thinking carefully about the life cycle stages that can be controlled or influenced by the organization is sufficient. Typical stages of a product (or service) life cycle include raw material acquisition, design, production, transportation/delivery, use, end-of-life treatment and final disposal. The life cycle stages that are applicable will vary depending on the activity, product or service.

An organization needs to determine the environmental aspects within the scope of its environmental management system. It takes into account the inputs and outputs (both intended and unintended) that are associated with its current and relevant past activities, products and services; planned or new developments; and new or modified activities, products and services. The method used should consider normal and abnormal operating conditions, shut-down and start-up conditions, as well as the reasonably foreseeable emergency situations identified in 6.1.1. Attention should be paid to prior

occurrences of emergency situations. For information on environmental aspects as part of managing change, see Clause A.1.

An organization does not have to consider each product, component or raw material individually to determine and evaluate their environmental aspects; it may group or categorize activities, products and services when they have common characteristics.

When determining its environmental aspects, the organization can consider:

a) emissions to air;

b) releases to water;

c) releases to land;

d) use of raw materials and natural resources;

e) use of energy;

f) energy emitted (e.g. heat, radiation, vibration (noise), light);

g) generation of waste and/or by-products;

h) use of space.

In addition to the environmental aspects that it can control directly, an organization determines whether there are environmental aspects that it can influence. These can be related to products and services used by the organization which are provided by others, as well as products and services that it provides to others, including those associated with (an) outsourced process(es). With respect to those an organization provides to others, it can have limited influence on the use and end-of-life treatment of the products and services. In all circumstances, however, it is the organization that determines the extent of control it is able to exercise, the environmental aspects it can influence, and the extent to which it chooses to exercise such influence.

Consideration should be given to environmental aspects related to the organization's activities, products and services, such as:

— design and development of its facilities, processes, products and services;

— acquisition of raw materials, including extraction;

— operational or manufacturing processes, including warehousing;

— operation and maintenance of facilities, organizational assets and infrastructure;

— environmental performance and practices of external providers;

— product transportation and service delivery, including packaging;

— storage, use and end-of-life treatment of products;

— waste management, including reuse, refurbishing, recycling and disposal.

There is no single method for determining significant environmental aspects, however, the method and criteria used should provide consistent results. The organization sets the criteria for determining its significant environmental aspects. Environmental criteria are the primary and minimum criteria for assessing environmental aspects. Criteria can relate to the environmental aspect (e.g. type, size, frequency) or the environmental impact (e.g. scale, severity, duration, exposure). Other criteria may also be used. An environmental aspect might not be significant when only considering environmental criteria. It can, however, reach or exceed the threshold for determining significance when other criteria are considered. These other criteria can include organizational issues, such as legal requirements or interested party concerns. These other criteria are not intended to be used to downgrade an aspect that is significant based on its environmental impact.

A significant environmental aspect can result in one or more significant environmental impacts, and can therefore result in risks and opportunities that need to be addressed to ensure the organization can achieve the intended outcomes of its environmental management system.

A.6.1.3 Compliance obligations

The organization determines, at a sufficiently detailed level, the compliance obligations it identified in 4.2 that are applicable to its environmental aspects, and how they apply to the organization. Compliance obligations include legal requirements that an organization has to comply with and other requirements that the organization has to or chooses to comply with.

Mandatory legal requirements related to an organization's environmental aspects can include, if applicable:

a) requirements from governmental entities or other relevant authorities;

b) international, national and local laws and regulations;

c) requirements specified in permits, licenses or other forms of authorization;

d) orders, rules or guidance from regulatory agencies;

e) judgements of courts or administrative tribunals.

Compliance obligations also include other interested party requirements related to its environmental management system which the organization has to or chooses to adopt. These can include, if applicable:

— agreements with community groups or non-governmental organizations;

— agreements with public authorities or customers;

— organizational requirements;

— voluntary principles or codes of practice;

— voluntary labelling or environmental commitments;

— obligations arising under contractual arrangements with the organization;

— relevant organizational or industry standards.

A.6.1.4 Planning action

The organization plans, at a high level, the actions that have to be taken within the environmental management system to address its significant environmental aspects, its compliance obligations, and the risks and opportunities identified in 6.1.1 that are a priority for the organization to achieve the intended outcomes of its environmental management system.

The actions planned may include establishing environmental objectives (see 6.2) or may be incorporated into other environmental management system processes, either individually or in combination. Some actions may be addressed through other management systems, such as those related to occupational health and safety or business continuity, or through other business processes related to risk, financial or human resource management.

When considering its technological options, an organization should consider the use of best-available techniques, where economically viable, cost-effective and judged appropriate. This is not intended to imply that organizations are obliged to use environmental cost-accounting methodologies.

A.6.2 Environmental objectives and planning to achieve them

Top management may establish environmental objectives at the strategic level, the tactical level or the operational level. The strategic level includes the highest levels of the organization and the

environmental objectives can be applicable to the whole organization. The tactical and operational levels can include environmental objectives for specific units or functions within the organization and should be compatible with its strategic direction.

Environmental objectives should be communicated to persons working under the organization's control who have the ability to influence the achievement of environmental objectives.

The requirement to "take into account significant environmental aspects" does not mean that an environmental objective has to be established for each significant environmental aspect, however, these have a high priority when establishing environmental objectives.

"Consistent with the environmental policy" means that the environmental objectives are broadly aligned and harmonized with the commitments made by top management in the environmental policy, including the commitment to continual improvement.

Indicators are selected to evaluate the achievement of measurable environmental objectives. "Measurable" means it is possible to use either quantitative or qualitative methods in relation to a specified scale to determine if the environmental objective has been achieved. By specifying "if practicable", it is acknowledged that there can be situations when it is not feasible to measure an environmental objective, however, it is important that the organization is able to determine whether or not an environmental objective has been achieved.

For additional information on environmental indicators, see ISO 14031.

A.7 Support

A.7.1 Resources

Resources are needed for the effective functioning and improvement of the environmental management system and to enhance environmental performance. Top management should ensure that those with environmental management system responsibilities are supported with the necessary resources. Internal resources may be supplemented by (an) external provider(s).

Resources can include human resources, natural resources, infrastructure, technology and financial resources. Examples of human resources include specialized skills and knowledge. Examples of infrastructure resources include the organization's buildings, equipment, underground tanks and drainage system.

A.7.2 Competence

The competency requirements of this International Standard apply to persons working under the organization's control who affect its environmental performance, including persons:

a) whose work has the potential to cause a significant environmental impact;

b) who are assigned responsibilities for the environmental management system, including those who:

   1) determine and evaluate environmental impacts or compliance obligations;

   2) contribute to the achievement of an environmental objective;

   3) respond to emergency situations;

   4) perform internal audits;

   5) perform evaluations of compliance.

A.7.3 Awareness

Awareness of the environmental policy should not be taken to mean that the commitments need to be memorized or that persons doing work under the organization's control have a copy of the documented

environmental policy. Rather, these persons should be aware of its existence, its purpose and their role in achieving the commitments, including how their work can affect the organization's ability to fulfil its compliance obligations.

A.7.4 Communication

Communication allows the organization to provide and obtain information relevant to its environmental management system, including information related to its significant environmental aspects, environmental performance, compliance obligations and recommendations for continual improvement. Communication is a two-way process, in and out of the organization.

When establishing its communication process(es), the internal organizational structure should be considered to ensure communication with the most appropriate levels and functions. A single approach can be adequate to meet the needs of many different interested parties, or multiple approaches might be necessary to address specific needs of individual interested parties.

The information received by the organization can contain requests from interested parties for specific information related to the management of its environmental aspects, or can contain general impressions or views on the way the organization carries out that management. These impressions or views can be positive or negative. In the latter case (e.g. complaints), it is important that a prompt and clear answer is provided by the organization. A subsequent analysis of these complaints can provide valuable information for detecting improvement opportunities for the environmental management system.

Communication should:

a) be transparent, i.e. the organization is open in the way it derives what it has reported on;

b) be appropriate, so that information meets the needs of relevant interested parties, enabling them to participate;

c) be truthful and not misleading to those who rely on the information reported;

d) be factual, accurate and able to be trusted;

e) not exclude relevant information;

f) be understandable to interested parties.

For information on communication as part of managing change, see Clause A.1. For additional information on communication, see ISO 14063.

A.7.5 Documented information

An organization should create and maintain documented information in a manner sufficient to ensure a suitable, adequate and effective environmental management system. The primary focus should be on the implementation of the environmental management system and on environmental performance, not on a complex documented information control system.

In addition to the documented information required in specific clauses of this International Standard, an organization may choose to create additional documented information for purposes of transparency, accountability, continuity, consistency, training, or ease in auditing.

Documented information originally created for purposes other than the environmental management system may be used. The documented information associated with the environmental management system may be integrated with other information management systems implemented by the organization. It does not have to be in the form of a manual.

A.8 Operation

A.8.1 Operational planning and control

The type and extent of operational control(s) depend on the nature of the operations, the risks and opportunities, significant environmental aspects and compliance obligations. An organization has the flexibility to select the type of operational control methods, individually or in combination, that are necessary to make sure the process(es) is (are) effective and achieve(s) the desired results. Such methods can include:

a) designing (a) process(es) in such a way as to prevent error and ensure consistent results;

b) using technology to control (a) process(es) and prevent adverse results (i.e. engineering controls);

c) using competent personnel to ensure the desired results;

d) performing (a) process(es) in a specified way;

e) monitoring or measuring (a) process(es) to check the results;

f) determining the use and amount of documented information necessary.

The organization decides the extent of control needed within its own business processes (e.g. procurement process) to control or influence (an) outsourced process(es) or (a) provider(s) of products and services. Its decision should be based upon factors such as:

— knowledge, competence and resources, including:

  — the competence of the external provider to meet the organization's environmental management system requirements;

  — the technical competence of the organization to define appropriate controls or assess the adequacy of controls;

— the importance and potential effect the product and service will have on the organization's ability to achieve the intended outcome of its environmental management system;

— the extent to which control of the process is shared;

— the capability of achieving the necessary control through the application of its general procurement process;

— improvement opportunities available.

When a process is outsourced, or when products and services are supplied by (an) external provider(s), the organization's ability to exert control or influence can vary from direct control to limited or no influence. In some cases, an outsourced process performed onsite might be under the direct control of an organization; in other cases, an organization's ability to influence an outsourced process or external supplier might be limited.

When determining the type and extent of operational controls related to external providers, including contractors, the organization may consider one or more factors such as:

— environmental aspects and associated environmental impacts;

— risks and opportunities associated with the manufacturing of its products or the provision of its services;

— the organization's compliance obligations.

For information on operational control as part of managing change, see Clause A.1. For information on life cycle perspective, see A.6.1.2.

An outsourced process is one that fulfils all of the following:

— it is within the scope of the environmental management system;

— it is integral to the organization's functioning;

— it is needed for the environmental management system to achieve its intended outcome;

— liability for conforming to requirements is retained by the organization;

— the organization and the external provider have a relationship where the process is perceived by interested parties as being carried out by the organization.

Environmental requirements are the organization's environmentally-related needs and expectations that it establishes for, and communicates to, its interested parties (e.g. an internal function, such as procurement; a customer; an external provider).

Some of the organization's significant environmental impacts can occur during the transportation, delivery, use, end-of-life treatment or final disposal of its product or service. By providing information, an organization can potentially prevent or mitigate adverse environmental impacts during these life cycle stages.

A.8.2 Emergency preparedness and response

It is the responsibility of each organization to be prepared and to respond to emergency situations in a manner appropriate to its particular needs. For information on determining emergency situations, see A.6.1.1.

When planning its emergency preparedness and response process(es), the organization should consider:

a) the most appropriate method(s) for responding to an emergency situation;

b) internal and external communication process(es);

c) the action(s) required to prevent or mitigate environmental impacts;

d) mitigation and response action(s) to be taken for different types of emergency situations;

e) the need for post-emergency evaluation to determine and implement corrective actions;

f) periodic testing of planned emergency response actions;

g) training of emergency response personnel;

h) a list of key personnel and aid agencies, including contact details (e.g. fire department, spillage clean-up services);

i) evacuation routes and assembly points;

j) the possibility of mutual assistance from neighbouring organizations.

A.9 Performance evaluation

A.9.1 Monitoring, measurement, analysis and evaluation

A.9.1.1 General

When determining what should be monitored and measured, in addition to progress on environmental objectives, the organization should take into account its significant environmental aspects, compliance obligations and operational controls.

The methods used by the organization to monitor and measure, analyse and evaluate should be defined in the environmental management system, in order to ensure that:

a) the timing of monitoring and measurement is coordinated with the need for analysis and evaluation results;

b) the results of monitoring and measurement are reliable, reproducible and traceable;

c) the analysis and evaluation are reliable and reproducible, and enable the organization to report trends.

The environmental performance analysis and evaluation results should be reported to those with responsibility and authority to initiate appropriate action.

For additional information on environmental performance evaluation, see ISO 14031.

A.9.1.2 Evaluation of compliance

The frequency and timing of compliance evaluations can vary depending on the importance of the requirement, variations in operating conditions, changes in compliance obligations and the organization's past performance. An organization can use a variety of methods to maintain its knowledge and understanding of its compliance status, however, all compliance obligations need to be evaluated periodically.

If compliance evaluation results indicate a failure to fulfil a legal requirement, the organization needs to determine and implement the actions necessary to achieve compliance. This might require communication with a regulatory agency and agreement on a course of action to fulfil its legal requirements. Where such an agreement is in place, it becomes a compliance obligation.

A non-compliance is not necessarily elevated to a nonconformity if, for example, it is identified and corrected by the environmental management system processes. Compliance-related nonconformities need to be corrected, even if those nonconformities have not resulted in actual non-compliance with legal requirements.

A.9.2 Internal audit

Auditors should be independent of the activity being audited, wherever practicable, and should in all cases act in a manner that is free from bias and conflict of interest.

Nonconformities identified during internal audits are subject to appropriate corrective action.

When considering the results of previous audits, the organization should include:

a) previously identified nonconformities and the effectiveness of the actions taken;

b) results of internal and external audits.

For additional information on establishing an internal audit programme, performing environmental management system audits and evaluating the competence of audit personnel, see ISO 19011. For information on internal audit programme as part of managing change, see Clause A.1.

A.9.3 Management review

The management review should be high-level; it does not need to be an exhaustive review of detailed information. The management review topics need not be addressed all at once. The review may take place over a period of time and can be part of regularly scheduled management activities, such as board or operational meetings; it does not need to be a separate activity.

Relevant complaints received from interested parties are reviewed by top management to determine opportunities for improvement.

For information on management review as part of managing change, see Clause A.1.

"Suitability" refers to how the environmental management system fits the organization, its operations, culture and business systems. "Adequacy" refers to whether it meets the requirements of this International Standard and is implemented appropriately. "Effectiveness" refers to whether it is achieving the desired results.

A.10 Improvement

A.10.1 General

The organization should consider the results from analysis and evaluation of environmental performance, evaluation of compliance, internal audits and management review when taking action to improve.

Examples of improvement include corrective action, continual improvement, breakthrough change, innovation and re-organization.

A.10.2 Nonconformity and corrective action

One of the key purposes of an environmental management system is to act as a preventive tool. The concept of preventive action is now captured in 4.1 (i.e. understanding the organization and its context) and 6.1 (i.e. actions to address risks and opportunities).

A.10.3 Continual improvement

The rate, extent and timescale of actions that support continual improvement are determined by the organization. Environmental performance can be enhanced by applying the environmental management system as a whole or improving one or more of its elements.

Annex B
(informative)

Correspondence between ISO 14001:2015 and ISO 14001:2004

Table B.1 shows the correspondence between this edition of this International Standard (ISO 14001:2015) and the previous edition (ISO 14001:2004).

Table B.1 — Correspondence between ISO 14001:2015 and ISO 14001:2004

ISO 14001:2015		ISO 14001:2004	
Clause title	**Clause number**	**Clause number**	**Clause title**
Introduction			Introduction
Scope	1	1	Scope
Normative references	2	2	Normative references
Terms and definitions	3	3	Terms and definitions
Context of the organization (title only)	4		
		4	Environmental management system requirements (title only)
Understanding the organization and its context	4.1		
Understanding the needs and expectations of interested parties	4.2		
Determining the scope of the environmental management system	4.3	4.1	General requirements
Environmental management system	4.4	4.1	General requirements
Leadership (title only)	5		
Leadership and commitment	5.1		
Environmental policy	5.2	4.2	Environmental policy
Organizational roles, responsibilities and authorities	5.3	4.4.1	Resources, roles, responsibility and authority
Planning (title only)	6	4.3	Planning (title only)
Actions to address risks and opportunities (title only)	6.1		
General	6.1.1		
Environmental aspects	6.1.2	4.3.1	Environmental aspects
Compliance obligations	6.1.3	4.3.2	Legal and other requirements
Planning action	6.1.4		
Environmental objectives and planning to achieve them (title only)	6.2	4.3.3	Objectives, targets and programme(s)
Environmental objectives	6.2.1		
Planning actions to achieve environmental objectives	6.2.2		
Support (title only)	7	4.4	Implementation and operation (title only)
Resources	7.1	4.4.1	Resources, roles, responsibility and authority
Competence	7.2	4.4.2	Competence, training and awareness
Awareness	7.3		
Communication (title only)	7.4	4.4.3	Communication
General	7.4.1		
Internal communication	7.4.2		
External communication	7.4.3		

Table B.1 *(continued)*

ISO 14001:2015		ISO 14001:2004	
Clause title	**Clause number**	**Clause number**	**Clause title**
Documented information (title only)	7.5	4.4.4	Documentation
General	7.5.1		
Creating and updating	7.5.2	4.4.5	Control of documents
		4.5.4	Control of records
Control of documented information	7.5.3	4.4.5	Control of documents
		4.5.4	Control of records
Operation (title only)	8	4.4	Implementation and operation (title only)
Operational planning and control	8.1	4.4.6	Operational control
Emergency preparedness and response	8.2	4.4.7	Emergency preparedness and response
Performance evaluation (title only)	9	4.5	Checking (title only)
Monitoring, measurement, analysis and evaluation (title only)	9.1	4.5.1	Monitoring and measurement
General	9.1.1		
Evaluation of compliance	9.1.2	4.5.2	Evaluation of compliance
Internal audit (title only)	9.2	4.5.5	Internal audit
General	9.2.1		
Internal audit programme	9.2.2		
Management review	9.3	4.6	Management review
Improvement (title only)	10		
General	10.1		
Nonconformity and corrective action	10.2	4.5.3	Nonconformity, corrective action and preventive action
Continual improvement	10.3		
Guidance on the use of this International Standard	Annex A	Annex A	Guidance on the use of this International Standard
Correspondence between ISO 14001:2015 and ISO 14001:2004	Annex B		
		Annex B	Correspondence between ISO 14001:2004 and ISO 9001:2008
Bibliography			Bibliography
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[5] ISO 14063, *Environmental management — Environmental communication — Guidelines and examples*

[6] ISO 19011, *Guidelines for auditing management systems*

[7] ISO 31000, *Risk management — Principles and guidelines*

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Acknowledgements

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