

**SINGAPORE STANDARD**

**Environmental management systems –  
General guidelines on implementation**



Published by

**Enterprise**  
**Singapore**

**SS ISO 14004 : 2016**  
(ICS 13.020.10)

---

SINGAPORE STANDARD

**Environmental management systems – General  
guidelines on implementation**

---

All rights reserved. Unless otherwise specified, no part of this Singapore Standard may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from Enterprise Singapore. Request for permission can be sent to: [standards@enterprisesg.gov.sg](mailto:standards@enterprisesg.gov.sg).

© ISO 2016 – All rights reserved  
© Enterprise Singapore 2016  
ISBN 978-981-4726-29-0

This Singapore Standard was approved by the Environment Standards Committee on behalf of the Singapore Standards Council on 22 February 2016.

First published, 1996

First revision, 2004

Second revision, 2016

The Environment Standards Committee, appointed by the Standards Council, consists of the following members:

	<b>Name</b>	<b>Capacity</b>
<b>Chairman</b>	: Dr Reginald Tan	<i>Member, Standards Council</i>
<b>Deputy Chairman</b>	: Mr Dalson Chung	<i>National Environment Agency</i>
<b>Secretary</b>	: Ms Lee Mong Ni	<i>SPRING Singapore</i>
<b>Members</b>	: Mr Chan Kean	<i>Individual Capacity</i>
	Mr Benedict Chia	<i>National Climate Change Secretariat</i>
	Mr Richard Reidinger Cleon	<i>Singapore Business Federation</i>
	Mr Michael Ho	<i>Waste Management &amp; Recycling Association of Singapore</i>
	Ms Kavita Gandhi	<i>Sustainable Energy Association of Singapore</i>
	Ms Leonie Lee	<i>Ministry of the Environment and Water Resources</i>
	Mr Jeffery Neng Kwei Sung	<i>Building and Construction Authority</i>
	Ms Amanda Ong	<i>Centre for Liveable Cities</i>
	Mr Palitha Karunaratne	<i>Singapore Chemical Industry Council</i>
	Ms Preety Mukherjee	<i>Ngee Ann Polytechnic</i>
	Ms Yvonne Soh	<i>Singapore Green Building Council</i>
	Dr Song Bin	<i>Singapore Institute of Manufacturing Technology</i>
	Mr Tan Liu Hai	<i>Ministry of Trade and Industry</i>
	Mr Tan Nguan Sen	<i>PUB, the National Water Agency</i>

The Technical Committee on Environmental Management, appointed by the Environment Standards Committee, consists of representatives from the following organisations:

	<b>Name</b>	<b>Capacity</b>
<b>Chairman</b>	: Dr Song Bin	<i>Member, Environment Standards Committee</i>
<b>Secretary</b>	: Ms Lee Mong Ni	<i>SPRING Singapore</i>
<b>Members</b>	: Mr Goh Su-Liang	<i>Singapore Green Building Council</i>
	Mr Heng Hoon Jee	<i>Individual Capacity</i>
	Dr Khoo Hsien Hui	<i>Institute of Chemical and Engineering Sciences</i>
	Ms Amanda Lin	<i>Singapore Manufacturing Federation</i>
	Mr Suresh K	<i>National Environment Agency</i>
	Dr Reginald Tan	<i>Individual Capacity</i>
	Mr Toh Eng Shyan	<i>Building and Construction Authority</i>
	Dr Zhou Yi	<i>Institution of Engineers, Singapore</i>

The Working Group on Environmental Management Systems, appointed by the Technical Committee to assist in the preparation of this standard, comprises the following experts who contribute in their *individual capacity*:

	<b>Name</b>
<b>Co-Convenor</b>	: Mr Chan Kean
<b>Co-Convenor</b>	: Mr Heng Hoon Jee
<b>Secretary</b>	: Ms Lee Mong Ni
<b>Members</b>	: Mr Chua Hian Choon Ms Goh Kai Ling Katherine Mr Kavickumar s/o Muruganathan Mr Herdial Singh Ms Delfin Yeo

The organisations in which the experts of the Working Group are involved are:

*Agility Logistics Services Pte Ltd*  
*Building and Construction Authority*  
*Singapore Accreditation Council*  
*Singapore Environment Council*  
*Systems on Silicon Manufacturing Co Pte Ltd*

(blank page)

**Contents**

	<b>Page</b>
National Foreword _____	8
Foreword _____	9
Introduction _____	10
1 Scope _____	13
2 Normative references _____	13
3 Terms and definitions _____	13
3.1 Terms related to organization and leadership _____	14
3.2 Terms related to planning _____	15
3.3 Terms related to support and operation _____	17
3.4 Terms related to performance evaluation and improvement _____	18
4 Context of the organization _____	19
4.1 Understanding the organization and its context _____	19
4.2 Understanding the needs and expectations of interested parties _____	23
4.2.1 General _____	23
4.2.2 Determining relevant interested parties _____	23
4.2.3 Determining relevant needs and expectations of relevant interested parties _____	23
4.2.4 Determining compliance obligations _____	24
4.2.5 Use and application of the needs and expectations of interested parties _____	24
4.3 Determining the scope of the environmental management system _____	25
4.4 Environmental management system _____	26
4.4.1 General _____	26
4.4.2 Establishing, implementing, maintaining and continually improving an environmental management system _____	27
5 Leadership _____	27
5.1 Leadership and commitment _____	27
5.2 Environmental policy _____	29
5.3 Organizational roles, responsibilities and authorities _____	31
6 Planning _____	32
6.1 Actions to address risks and opportunities _____	32
6.1.1 General _____	32
6.1.2 Environmental aspects _____	36
6.1.3 Compliance obligations _____	41

	<b>Page</b>
6.1.4 Planning action _____	43
6.2 Environmental objectives and planning to achieve them _____	44
6.2.1 General _____	44
6.2.2 Establishing environmental objectives _____	44
6.2.3 Planning actions to achieve environmental objectives _____	45
6.2.4 Performance indicators _____	45
7 Support _____	46
7.1 Resources _____	46
7.2 Competence _____	47
7.3 Awareness _____	49
7.4 Communication _____	50
7.4.1 General _____	50
7.4.2 Internal communication _____	52
7.4.3 External communication _____	52
7.5 Documented information _____	52
7.5.1 General _____	52
7.5.2 Creating and updating _____	54
7.5.3 Control of documented information _____	54
8 Operation _____	55
8.1 Operational planning and control _____	55
8.1.1 General guidance: Operational control _____	55
8.1.2 Identifying needs for operational controls _____	56
8.1.3 Establishing operational controls _____	57
8.2 Emergency preparedness and response _____	58
9 Performance evaluation _____	59
9.1 Monitoring, measurement, analysis and evaluation _____	59
9.1.1 General _____	59
9.1.2 Evaluation of compliance _____	60
9.2 Internal audit _____	62
9.3 Management review _____	63
10 Improvement _____	64
10.1 General _____	64
10.2 Nonconformity and corrective action _____	65

	<b>Page</b>
10.3 Continual improvement _____	66
10.3.1 Opportunities for improvement _____	66
10.3.2 Implementation of continual improvement _____	67
 <b>Annexes</b>	
A (informative) Examples of activities, products and services and their associated environmental aspects and environmental impacts, risks and opportunities, and actions _____	68
B (informative) Phased approach to implementing an environmental management system (based on ISO 14005) _____	76
Bibliography _____	79



## **National Foreword**

This Singapore Standard was prepared by the Working Group on Environmental Management Systems appointed by the Technical Committee on Environmental Management which is under the purview of the Environment Standards Committee. This standard is a revision of SS ISO 14004 : 2004 and is identical with ISO 14004 : 2016. SS ISO 14004 : 2016 cancels and replaces SS ISO 14004 : 2004.

Attention is drawn to the following :

1. Where appropriate, the words 'International Standard' shall be read as 'Singapore Standard'.
2. The references to International Standards shall be replaced by the following Singapore Standards:

International Standard	Corresponding Singapore Standard
ISO 9001	SS ISO 9001
ISO 14001	SS ISO 14001
ISO 14004	SS ISO 14004
ISO 19011	SS ISO 19011

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

### **NOTE**

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

## 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](http://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](http://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](http://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 14004:2004), which has been technically revised.

## **Introduction**

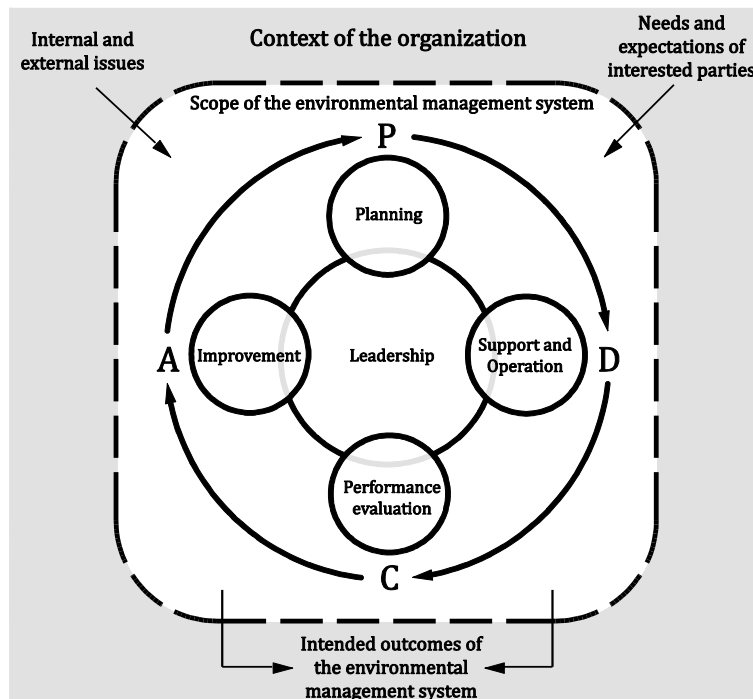
Achieving a balance between the environment, society and the economy is considered essential to meet the needs of the present without compromising the ability of future generations to meet their needs. Sustainable development is a goal achieved by balancing the three pillars of sustainability: the environment,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

Organizations, whether public or private, large or small, in developed or in emerging economies, have an impact on the environment and can be affected by the environment in return. There is a growing understanding that human development and well-being are contingent on preserving and conserving our natural resources, upon which all human activity and productivity depend. Achieving sound environmental performance requires organizational commitment to a systematic approach and to continual improvement of an environmental management system.

Societal expectations are driving the need for improved management of the resources necessary to support human development, through greater efficiency, transparency and accountability for all organizations. There are growing pressures on the environment, from climate change, over-consumption of resources and the challenges created by degradation of ecosystems and the loss of biodiversity.

The aim of this International Standard is to provide organizations with guidance for a common framework, in order to establish, implement, maintain and continually improve a system to support better environmental management. This environmental management framework should contribute to the long-term success of the organization and to the overall goal of sustainable development. The framework of a robust, credible and reliable environmental management system is shown in Figure 1. It includes:

- understanding the context in which the organization operates;
- determining and understanding the relevant needs and expectations of interested parties, as they relate to the environmental management system of the organization;
- establishing and implementing an environmental policy and environmental objectives;
- top management taking a leading role in improving environmental performance;
- identifying aspects of the organization's activities, products and services that can result in significant environmental impacts;
- identifying the environmental conditions, including events, that can affect the organization;
- considering the organization's risks and opportunities that need to be addressed in relation to its:
  - environmental aspects;
  - compliance obligations;
  - other issues (see 4.1) and requirements (see 4.2);
- increasing awareness of the organization's interaction with the environment;
- establishing operational controls, as appropriate, to manage the organization's significant environmental aspects and compliance obligations, and risks and opportunities that need to be addressed;
- evaluating environmental performance and taking actions, as necessary, for its improvement.



**Figure 1—Environmental management system model for this International Standard**

The outcomes of a systematic approach to environmental management can provide top management with quantitative and qualitative data that enables informed business decisions that build long-term success and create options for contributing to sustainable development. The success of the environmental management system depends on commitment from all levels and functions of the organization, led by top management. The opportunities include:

- protecting the environment, including the prevention or reduction of adverse environmental impacts;
- controlling or influencing the way products and services are designed, manufactured, distributed, used and disposed;
- using a life cycle perspective to prevent environmental impacts from being unintentionally shifted elsewhere within the cycle;
- achieving financial and operational benefits that can result from implementing environmentally sound alternatives which strengthen the organization's market position;
- communicating environmental information to relevant interested parties.

In addition to enhanced environmental performance, the potential benefits associated with an effective environmental management system include:

- assuring customers of the organization's commitment to demonstrable environmental management;
- maintaining good public and community relations;
- satisfying investor criteria and improving access to capital;
- enhancing image and market share;

- improving cost control;
- preventing incidents that result in liability;
- conserving input materials and energy;
- designing more environmental friendly products;
- facilitating the attainment of permits and authorizations and meeting their requirements;
- promoting environmental awareness among external providers and all persons doing work under the organization's control;
- improving relations between industry and government.

It is possible for an organization to operate an integrated management system that can align with requirements from quality, occupational health and safety and environmental management systems, for example. This approach provides opportunities to reduce duplication and builds in efficiencies.

Examples and approaches are presented throughout this International Standard for illustrative purposes. They are not intended to represent the only possibilities, nor are they necessarily suitable for every organization. In designing and implementing, or improving an environmental management system, organizations should select approaches that are appropriate to their own circumstances. Practical Help Boxes are intended to provide additional information to support the guidance contained within this International Standard.

# Environmental management systems — General guidelines on implementation

## 1 Scope

This International Standard provides guidance for an organization on the establishment, implementation, maintenance and improvement of a robust, credible and reliable environmental management system. The guidance provided is intended for 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 provides 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.

The guidance in this International Standard can help an organization to enhance its environmental performance, and enables the elements of the environmental management system to be integrated into its core business process.

**NOTE** While the environmental management system is not intended to manage occupational health and safety issues, these can be included when an organization seeks to implement an integrated environmental and occupational health and safety management system.

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.

The guidance in this International Standard can be used in whole or in part to systematically improve environmental management. It serves to provide additional explanation of the concepts and requirements.

While the guidance in this International Standard is consistent with the ISO 14001 environmental management system model, it is not intended to provide interpretations of the requirements of ISO 14001.

## 2 Normative references

There are no normative references.