

This is a preview of "ISO 14033:2019". [Click here to purchase the full version from the ANSI store.](#)

First edition
2019-02

Environmental management — Quantitative environmental information — Guidelines and examples

*Management environnemental — Information environnementale
quantitative — Lignes directrices et exemples*



Reference number
ISO 14033:2019(E)

© ISO 2019

This is a preview of "ISO 14033:2019". [Click here to purchase the full version from the ANSI store.](#)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of "ISO 14033:2019". [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Types of information.....	2
3.2 Managing information.....	2
3.3 Characteristics of information.....	3
4 Use of quantitative environmental information	3
4.1 General.....	3
4.2 Internal use of quantitative environmental information.....	4
4.3 External use of quantitative environmental information.....	4
4.4 Using quantitative environmental information for comparisons.....	5
5 Principles for generating and providing quantitative environmental information	5
5.1 General.....	5
5.2 Relevance.....	5
5.3 Credibility.....	6
5.4 Consistency.....	6
5.5 Comparability.....	6
5.6 Transparency.....	6
5.7 Completeness.....	6
5.8 Validity.....	6
5.9 Appropriateness.....	6
5.10 Materiality.....	6
6 Guidelines	7
6.1 General.....	7
6.1.1 Plan-Do-Check-Act approach.....	7
6.1.2 Data sources and categories of data.....	10
6.2 Plan.....	13
6.2.1 Conceptualize whole system.....	13
6.2.2 Break down system components.....	14
6.2.3 Select parameters.....	14
6.2.4 Define basic data.....	14
6.2.5 Identify measuring methods.....	15
6.3 Do.....	15
6.3.1 Set up measuring methods.....	15
6.3.2 Acquire basic data.....	15
6.3.3 Consolidate parameters.....	15
6.3.4 Synthesize system components.....	16
6.3.5 Aggregate whole system.....	16
6.4 Check.....	16
6.4.1 General views.....	16
6.4.2 Applying the framework for Check or review.....	17
6.4.3 Process.....	17
6.5 Act.....	18
Annex A (informative) Illustrative examples of the framework	19
Annex B (informative) General simple examples	28
Annex C (informative) Sector-specific case studies	33
Annex D (informative) Case studies from the ISO 14000 family of standards	50
Annex E (informative) Clarification of concepts	64

This is a preview of "ISO 14033:2019". [Click here to purchase the full version from the ANSI store.](#)

Bibliography65

This is a preview of "ISO 14033:2019". [Click here to purchase the full version from the ANSI store.](#)

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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 4, *Environmental performance evaluation*.

This first edition cancels and replaces ISO/TS 14033:2012, which has been technically revised.

The main changes compared with the previous edition are as follows:

- definitions have been added and principles have been modified;
- the framework has been elaborated and new examples of general application have been added;
- extended explanations of data sources and categories of data have been added;
- new topics in the ISO 14000 family of standards, such as financial applications, have been added;
- the relationship between quantitative environmental information and industrial digitalization has been added;
- the relationship between systems analytical environmental data and metrological aspects of acquiring data has been added;
- [Annexes D](#) and [E](#) have been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides guidelines and examples for the acquisition and provision of quantitative environmental information. It is also intended to support review and verification of quantitative information. This document supports the continual improvement of environmental management and the achievement of sustainable development. The purpose of this document is to help break down the complexity of environmental data handling, by applying systems analysis and metrology, into distinguishable practical steps, each with low complexity and a clear objective, to assist the process of gathering and processing quantitative environmental information. This document is intended for use by those who work with environmental quantitative information, including data acquisition, compilation, reporting and review.

Since this document addresses data measurement, data acquisition and compilation, it is also closely linked to areas of digitalization, such as digital twins, positioning of sensors, and acquisition, handling and interpretation of sensor data, as well as concepts related to “big data”, such as statistical analysis and statistical inference. This document provides guidelines on how to effectively and efficiently position sensors (or other data sources) for such analyses, as well as on how to transparently make references to such data sources, to help interpret and review big data statistical analyses.

The guiding framework adheres to the general principles of continual improvement and follows an iterative Plan-Do-Check-Act (PDCA) approach.

This document addresses data quality by providing guidelines and examples on how to acquire, compile and report data to reach the data quality requested by the application of quantitative environmental information. Data quality is an intended and implicit result from the guidelines provided by this document, but it is not specifically addressed throughout the text.

The guidelines range from planning, defining and acquiring quantitative data to performing mathematical processing. They can be used to review the work that results in environmental quantitative information for an application as part of a method or tool, such as life cycle assessment or environmental performance evaluations. The guidelines do not include specific methods or tools, but they address how to acquire and provide quantitative data for such applications. This document refers to data as individual entities rather than sets of values such as databases. The guidelines are developed with an understanding that many applications of quantitative environmental information are intended for different types of assessments within organizations. Quantitative environmental information therefore impacts the level of confidence for decision making, including technology development, investments and financial decisions. Any type of intended application and related assessment is dependent on first identifying the expectations linked to the results generated using the quantitative environmental information before establishing statistical and numerical design criteria to be used for data collection.

The guidelines are developed with the understanding that many applications of environmental information are intended for quantitative comparisons, such as levelling and benchmarking, controlling continual improvement (comparing with the previous year), quantitative identification of priority areas, numerical appraisal and comparison of risks, decisions about design, investment or procurement. This document supports quantitative comparisons by highlighting perspectives of the planning of the acquisition and provision that are particularly relevant to achieving comparable quantitative results.

This document provides guidelines for acquiring and providing a broad variety of quantitative environmental information and data. When an organization applies this document for various purposes within its environmental management system, or for specific tools, purposes or applications, maximum benefit is gained by following the principles described in [Clause 5](#).

For adequate application of this document for the acquisition, compilation and reporting of quantitative environmental information, particular consideration should be given to identifying the skills needed by the practitioner.

[Annex E](#) provides explanatory information to prevent misinterpretation of the guidance presented in this document.