
**Environmental management — Water
footprint — Illustrative examples on
how to apply ISO 14046**

*Management environnemental — Empreinte eau — Exemples
illustrant l'application de l'ISO 14046*



This document is a preview generated by ERS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, 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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	1
4.1 Symbols.....	1
4.2 Abbreviated terms.....	2
5 Selection of the type of water footprint assessment	3
5.1 General.....	3
5.2 Choice of the type of water footprint study.....	6
6 Presentation of the examples	7
6.1 Example A – Water footprint inventory of two power plants.....	7
6.1.1 Goal and scope.....	7
6.1.2 Inventory.....	8
6.1.3 Interpretation.....	8
6.2 Example B – Water footprint inventory of rice cultivation.....	8
6.2.1 Goal and scope.....	8
6.2.2 Inventory.....	9
6.3 Example C – Water scarcity footprint of municipal water management.....	12
6.3.1 Goal and scope.....	12
6.3.2 Inventory.....	12
6.3.3 Impact assessment.....	13
6.3.4 Interpretation.....	13
6.4 Example D – Water scarcity footprint of rice cultivation (cradle-to-gate).....	14
6.4.1 Goal and scope.....	14
6.4.2 Inventory.....	14
6.4.3 Impact assessment.....	14
6.5 Example E – Water scarcity footprint of a textile with life cycle stages in different locations.....	15
6.5.1 Goal and scope.....	15
6.5.2 Inventory.....	15
6.5.3 Impact assessment.....	16
6.5.4 Interpretation.....	16
6.6 Example F – Water scarcity footprint of reservoir operation, reflecting seasonality.....	17
6.6.1 Goal and scope.....	17
6.6.2 Inventory.....	17
6.6.3 Impact assessment.....	17
6.6.4 Interpretation.....	18
6.7 Example G – Water scarcity footprint and water availability footprint of packaging production.....	18
6.7.1 Goal and scope.....	18
6.7.2 Inventory.....	19
6.7.3 Impact assessment.....	19
6.8 Example H – Water scarcity footprint differentiated by source of water.....	21
6.8.1 Goal and scope.....	21
6.8.2 Inventory.....	22
6.8.3 Impact assessment.....	22
6.8.4 Interpretation.....	22
6.9 Example I – Variation of water scarcity by forest management and land use.....	23
6.9.1 Goal and scope.....	23
6.9.2 Inventory.....	23

6.9.3	Impact assessment.....	23
6.9.4	Interpretation.....	24
6.10	Example J - Water eutrophication footprint of maize cultivation, calculated as one or two indicator results.....	24
6.10.1	Goal and scope.....	24
6.10.2	Inventory.....	24
6.10.3	Impact assessment.....	25
6.11	Example K - Comprehensive water footprint profile of packaging production.....	27
6.11.1	Goal and scope.....	27
6.11.2	Inventory.....	27
6.11.3	Impact assessment.....	27
6.11.4	Interpretation.....	30
6.12	Example L - Non-comprehensive weighted water footprint of cereal cultivation.....	30
6.12.1	Goal and scope.....	30
6.12.2	Inventory.....	30
6.12.3	Impact assessment.....	30
6.13	Example M - Water footprint of packaging production as part of a life cycle assessment.....	32
6.13.1	Goal and scope.....	32
6.13.2	Inventory.....	32
6.13.3	Impact assessment.....	32
6.13.4	Interpretation.....	33
6.14	Example N - Non-comprehensive water footprint of textile production.....	33
6.14.1	Goal and Scope.....	33
6.14.2	Inventory.....	33
6.14.3	Impact assessment.....	34
6.14.4	Discussion.....	36
6.14.5	Limitations.....	36
6.15	Example O - Non-comprehensive weighted water footprint of municipal water management.....	37
6.15.1	Goal and scope.....	37
6.15.2	Inventory.....	37
6.15.3	Impact assessment.....	38
6.15.4	Interpretation.....	40
6.16	Example P - Non-comprehensive water footprint of a company producing chemicals (organization).....	41
6.16.1	Goal and scope.....	41
6.16.2	Inventory.....	42
6.16.3	Impact assessment.....	43
6.16.4	Interpretation.....	45
6.17	Example Q - Water scarcity footprint of an aluminium company (organization).....	46
6.17.1	Goal and scope.....	46
6.17.2	Inventory.....	47
6.17.3	Impact assessment.....	47
6.17.4	Interpretation.....	51
6.18	Example R - Non-comprehensive direct water footprint of a hotel (organization) considering seasonality.....	51
6.18.1	Goal and scope.....	51
6.18.2	Inventory.....	52
6.18.3	Impact assessment.....	52
6.18.4	Interpretation.....	53
7	Issues arising in water footprint studies.....	53
7.1	Seasonality.....	53
7.2	Use of a baseline.....	54
7.3	Evaporation, transpiration and evapotranspiration.....	55
7.4	Water quality.....	55
7.4.1	General.....	55
7.4.2	Relevant air and soil (and water) emissions.....	56
7.5	Choice of indicators along the environmental mechanism.....	57

7.6 Identification of foreseen consequences of the excluded impacts..... 58

7.7 Sensitivity analysis..... 58

Bibliography..... 60

This document is a preview generated by EVS

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 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 5, *Life cycle assessment*.

This second edition cancels and replaces the first edition (ISO/TR 14073:2016), of which this constitutes a minor revision incorporating minor editorial corrections and improved figures.

Introduction

Principles, requirements and guidelines for the quantification and reporting of a water footprint are given in ISO 14046. The water footprint assessment according to ISO 14046 can be conducted as a stand-alone assessment, where only impacts related to water are assessed, or as part of a life cycle assessment. In addition, a variety of modelling choices and approaches are possible depending on the goal and scope of the assessment. The water footprint can be reported as a single value or as a profile of impact category indicator results.

This document provides illustrative examples on the application of ISO 14046 to further enhance understanding of ISO 14046 and to facilitate its widespread application.

At the time of the publication of this document, water footprint assessment methods are developing rapidly. Practitioners are encouraged to be aware of the latest developments when undertaking water footprint studies.

These examples are for illustrative purposes only and some of the data used are fictitious. The data are not intended to be used outside of the context of this document.

The Bibliography might contain references to methods that are not fully compliant with ISO 14046:2014.

Environmental management — Water footprint — Illustrative examples on how to apply ISO 14046

1 Scope

This document provides illustrative examples of how to apply ISO 14046, in order to assess the water footprint of products, processes and organizations based on life cycle assessment.

The examples are presented to demonstrate particular aspects of the application of ISO 14046 and therefore do not present all of the details of an entire water footprint study report as required by ISO 14046.

NOTE The examples are presented as different ways of applying ISO 14046 and do not preclude alternative ways of calculating the water footprint, provided they are in accordance with ISO 14046.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14046:2014, *Environmental management — Water footprint — Principles, requirements and guidelines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14046:2014 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Symbols and abbreviated terms

4.1 Symbols

α	characterization factor
C	Concentration
E	Emission
F	Footprint
R	Rainfall
V	Volume