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# Environmental management - Material flow cost accounting - General framework (ISO 14051:2011)

## I.S. EN ISO 14051:2011

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## Environmental management - Material flow cost accounting - General framework (ISO 14051:2011)

Management environnemental - Comptabilité des flux  
matières - Cadre général (ISO 14051:2011)

Umweltmanagement - Materialflusskostenrechnung -  
Allgemeine Rahmenbedingungen (ISO 14051:2011)

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## **Foreword**

This document (EN ISO 14051:2011) has been prepared by Technical Committee ISO/TC 207 “Environmental management”.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2012, and conflicting national standards shall be withdrawn at the latest by March 2012.

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**Environmental management — Material  
flow cost accounting — General  
framework**

*Management environnemental — Comptabilité des flux matières —  
Cadre général*



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## **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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 14051 was prepared by Technical Committee ISO/TC 207, *Environmental management*.

## Introduction

The aim of this International Standard is to offer a general framework for material flow cost accounting (MFCA). MFCA is a management tool that can assist organizations to better understand the potential environmental and financial consequences of their material and energy use practices, and seek opportunities to achieve both environmental and financial improvements via changes in those practices.

MFCA promotes increased transparency of material and energy use practices via development of a material flow model that traces and quantifies the flows and stocks of materials within an organization in physical units. Energy can either be included as a material or quantified separately in MFCA. Any costs that are generated by and/or associated with the material flows and energy use are subsequently quantified and attributed to them. In particular, MFCA highlights the comparison of costs associated with products and costs associated with material losses, e.g. waste, air emissions, wastewater.

Many organizations are unaware of the full extent of the actual cost of material losses in adequate detail because data on material losses and the associated costs are often difficult to extract from conventional information, accounting and environmental management systems. However, once available via MFCA, these data can be used to seek opportunities to reduce material use and/or material losses, improve efficient uses of material and energy, and reduce adverse environmental impacts and associated costs.

MFCA is applicable to all industries that use materials and energy, including extractive, manufacturing, service, and other industries. It can be implemented by organizations of any type and scale, with or without environmental management systems in place, in emerging economies as well as in industrialized countries. MFCA is one of the major tools of environmental management accounting and is primarily designed for use within a single facility or organization. However, MFCA can be extended to multiple organizations within a supply chain, to help them develop an integrated approach to more efficient use of materials and energy.

This International Standard provides

- common terminologies;
- objective and principles;
- fundamental elements;
- implementation steps.

In addition, the annexes illustrate some of the differences between MFCA and conventional cost accounting, cost evaluation methods, and case examples of MFCA application from different sectors and a supply chain.



# Environmental management — Material flow cost accounting — General framework

## 1 Scope

This International Standard provides a general framework for material flow cost accounting (MFCA). Under MFCA, the flows and stocks of materials within an organization are traced and quantified in physical units (e.g. mass, volume) and the costs associated with those material flows are also evaluated. The resulting information can act as a motivator for organizations and managers to seek opportunities to simultaneously generate financial benefits and reduce adverse environmental impacts. MFCA is applicable to any organization that uses materials and energy, regardless of their products, services, size, structure, location, and existing management and accounting systems.

MFCA can be extended to other organizations in the supply chain, both upstream and downstream, thus helping to develop an integrated approach to improving material and energy efficiency in the supply chain. This extension can be beneficial because waste generation in an organization is often driven by the nature or quality of materials provided by a supplier, or the specification of the product requested by a customer.

By definition, management accounting and environmental management accounting (EMA) focus on providing organizations with information for internal decision-making. MFCA, one of the major tools of EMA, also focuses on information for internal decision-making, and is intended to complement existing environmental management and management accounting practices. Although an organization can choose to include external costs in an MFCA analysis, external costs are outside the scope of this International Standard.

The MFCA framework presented in this International Standard includes common terminologies, objective and principles, fundamental elements, and implementation steps. However, detailed calculation procedures or information on techniques for improving material or energy efficiency are outside the scope of this International Standard.

This International Standard is not intended for the purpose of third party certification.

## 2 Normative references

The following referenced documents are indispensable for the application 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 14050, *Environmental management — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14050 and the following apply.

### 3.1

#### **cost**

monetary value of resources consumed to perform activities

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