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

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



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## Contents

Page

Foreword .....	iv
Introduction.....	v
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Terms and definitions .....</b>	<b>1</b>
<b>4 Objective and principles of MFCA .....</b>	<b>4</b>
<b>4.1 Objective .....</b>	<b>4</b>
<b>4.2 Principles .....</b>	<b>4</b>
<b>5 Fundamental elements of MFCA.....</b>	<b>5</b>
<b>5.1 Quantity centre .....</b>	<b>5</b>
<b>5.2 Material balance.....</b>	<b>5</b>
<b>5.3 Cost calculation.....</b>	<b>6</b>
<b>5.4 Material flow model .....</b>	<b>8</b>
<b>6 Implementation steps of MFCA.....</b>	<b>9</b>
<b>6.1 General .....</b>	<b>9</b>
<b>6.2 Involvement of management.....</b>	<b>10</b>
<b>6.3 Determination of necessary expertise .....</b>	<b>10</b>
<b>6.4 Specification of a boundary and a time period .....</b>	<b>10</b>
<b>6.5 Determination of quantity centres .....</b>	<b>11</b>
<b>6.6 Identification of inputs and outputs for each quantity centre .....</b>	<b>11</b>
<b>6.7 Quantification of the material flows in physical units .....</b>	<b>11</b>
<b>6.8 Quantification of the material flows in monetary units .....</b>	<b>11</b>
<b>6.9 MFCA data summary and interpretation .....</b>	<b>12</b>
<b>6.10 Communication of MFCA results.....</b>	<b>13</b>
<b>6.11 Identification and assessment of improvement opportunities.....</b>	<b>13</b>
<b>Annex A (informative) Difference between MFCA and conventional cost accounting.....</b>	<b>14</b>
<b>Annex B (informative) Cost calculation and allocation in MFCA .....</b>	<b>16</b>
<b>Annex C (informative) Case examples of MFCA.....</b>	<b>24</b>
<b>Bibliography.....</b>	<b>37</b>

## 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*.

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## 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.