SLOVENSKI STANDARD
SIST EN ISO 14051:2012

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Ravnanje z okoljem - Stroškovno računovodstvo materialnega toka - Splošne smernice (ISO 14051:2011)

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

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

Management environnemental - Coût d'acheminement des matières - Cadre général (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”.

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INTERNATIONAL STANDARD

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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.

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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.

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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

3.2
cost allocation
indirect attribution of a cost between different objects, such as a product or process, by using an appropriate apportionment basis.

NOTE In this International Standard, the object can be processes, quantity centres, products and material losses.

3.3
cost assignment
direct attribution of a cost to a specific object, such as a product or process

3.4
energy cost
cost for electricity, fuels, steam, heat, compressed air and other like media

NOTE Energy cost can be either included under material cost or quantified separately, at the discretion of the organization.

3.5
energy loss
all energy use, except energy incorporated into intended products

NOTE Energy loss can be either included under material loss or quantified separately, at the discretion of the organization.

3.6
energy use
manner or kind of application of energy

EXAMPLE Ventilation; lighting; heating; cooling; transportation; processes; production lines.

[ISO 50001:2011, definition 3.18]

3.7
environmental management accounting
EMA
identification, collection, analysis and use of two types of information for internal decision making:

— physical information on the use, flows and destinies of energy, water and materials (including wastes) and

— monetary information on environment-related costs, earnings and savings

[IFAC, 2005[15]]

3.8
input
material or energy flow that enters a quantity centre

3.9
inventory
stock of materials, intermediate products, products in process, and finished products

3.10
material
substance that enters and/or leaves a quantity centre

NOTE 1 Materials can be divided into two categories:

— materials that are intended to become part of products, e.g. raw materials, auxiliary materials, intermediate products;

— materials that do not become part of products, e.g. cleaning solvents and chemical catalysts, which often are referred to as operating materials.

NOTE 2 Some types of materials can be classified into either category, depending on their use. Water is one such material. In some cases, water can become part of a product (e.g. bottled water), while in other cases it can be used as an operating material (e.g. water used in an equipment washing process).

NOTE 3 Energy carriers like fuels or steam can be identified as materials, at the discretion of the organization.

3.11
material balance
comparison of physical quantities of inputs, outputs and inventory changes in a quantity centre over a specified time period

3.12
material cost
cost for a substance that enters and/or leaves a quantity centre

NOTE Material cost can be calculated in various ways, e.g. standard cost, average cost, and purchase cost. The choice between cost calculation methods is at the discretion of the organization.

3.13
material distribution percentage
proportion of the material inputs that flow into products or material losses

3.14
material flow
movements of a material or group of materials between various quantity centres within an organization or along a supply chain

3.15
material flow cost accounting
MFCA
tool for quantifying the flows and stocks of materials in processes or production lines in both physical and monetary units

3.16
material loss
all material outputs generated in a quantity centre, except for intended products

NOTE 1 Material losses include air emissions, wastewater and solid waste, even if these material outputs can be reworked, recycled or reused internally, or have market value.

NOTE 2 By-products can be considered as either material losses or products, at the discretion of the organization.

3.17
output
product, material loss or energy loss that leaves a quantity centre

NOTE Any intermediate or semi-finished product that leaves a quantity centre is treated as a product in MFCA.

3.18
process
set of interrelated or interacting activities that transforms inputs to outputs

[ISO 14040:2006, definition 3.11]

3.19
product
any goods or service

NOTE Adapted from ISO 14040:2006, definition 3.9.