Lecture #44

ERDM

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Purposes -- ISO 14000

- **ISO 14000 is being designed to achieve several purposes:**
- **To make it more difficult for countries to use environmental issues as trade barriers.**
- **To create a universal set of standards to help businesses meet their commitment to the environment**
- **To allow companies to avoid multiple registrations, inspections and certifications as their products cross from country to country.**

-- material from B. Bras (Ga Tech)

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Areas Addressed by ISO 14000

To accomplish these purposes, the ISO 14000 standards will address five major areas:

- General corporate policies and procedures governing environmental management systems.
- Auditing.
- Performance evaluation.
- Environmental labeling (EL).
- Life-cycle assessment (LCA).

ISO Goals

- **Uniformity of methodologies (EL/LCA)**

- **Predictability and consistency of results**

- **Harmonized application protocols (EL)**

- **Principles and guidelines to avoid unintentional trade barriers (EL/LCA)**

  - **Focus on management rather than goals (HOW vs. WHAT)**
  - **Promotes third party audits of management (HOWs) not of attainments (WHATs)**
  - **Establishes uniform methodologies for product evaluation and communication of environmental attributes.**

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Introduction to the ISO 14000 Family of Environmental Management Standards

Adapted from Text by Poul Jensen & Svend Andersson

- **Preface, Scope**
- **How Standards are Prepared**
- **Overview of the ISO 14000 Family**
- **Environmental Management Vocabulary**
- **Abbreviations used in the Standards**

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Preface/Scope

- **The ISO 14000 family of environmental management standards**
    - **Consists of 23 individual standards**
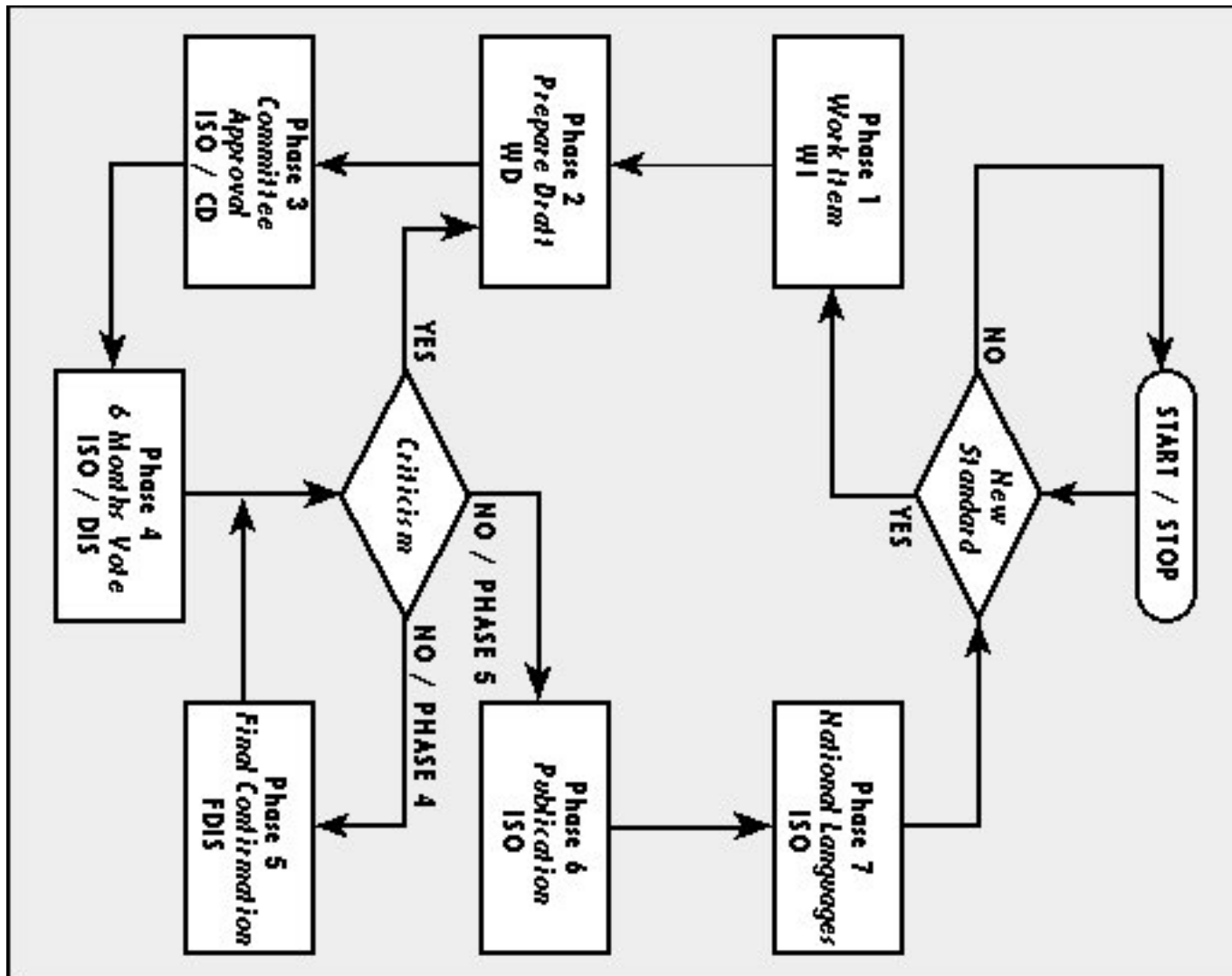   - **Guidelines & technical reports (TR) -- environmental management system (EMS)**

Cover all areas of environmental significance

- **Savings when improving environmental conditions;**
- **Increased sales**
- **Marketing advantages - possibly substantiated by an environmental management certificate.**

Preparation of Environmental Management Standards

- **The International Organization for Standardization -- Technical Committee 207 (ISO/TC 207) prepares environmental management standards in working group activities in subcommittees.**

- **Subcommittee members are representatives from the national committees.**

- **See diagram for development process.**
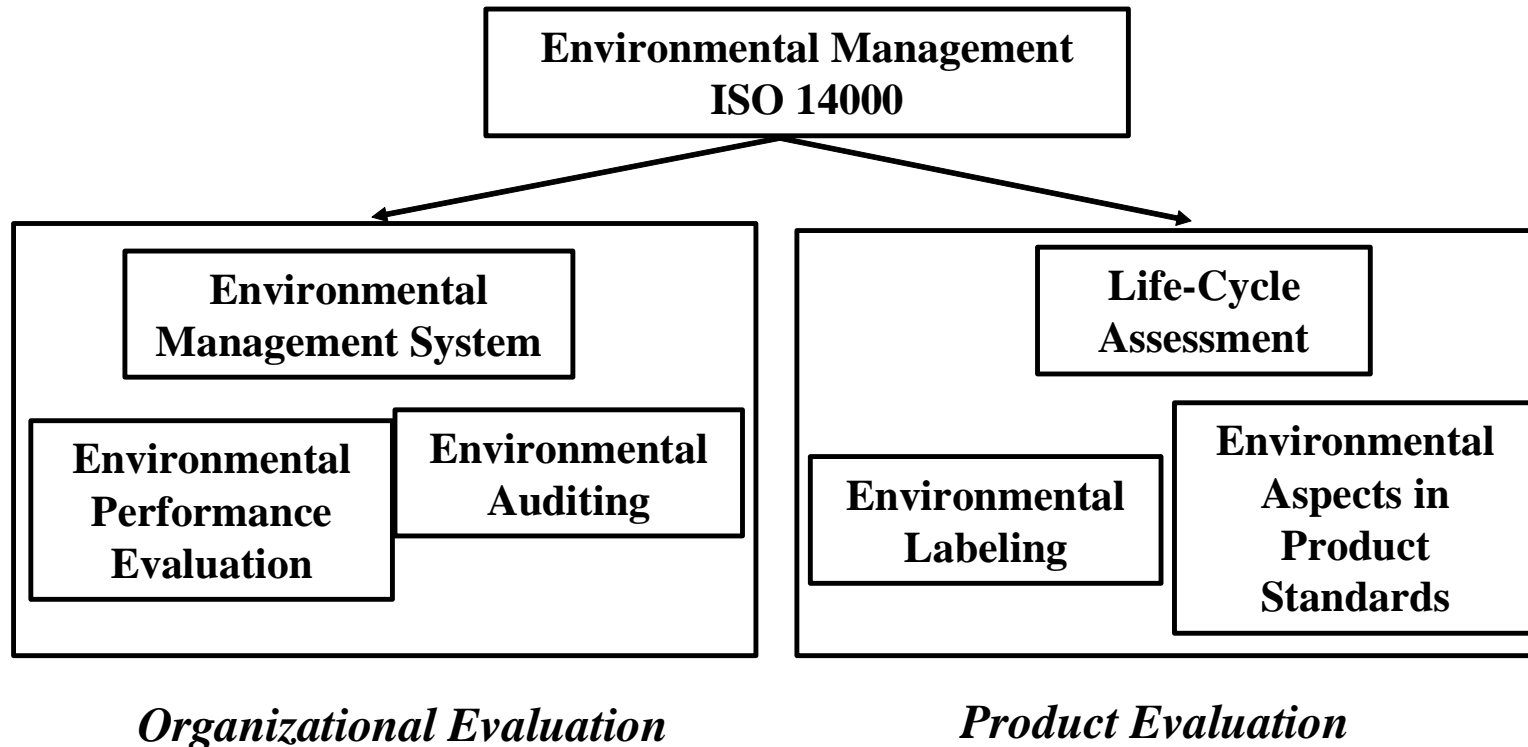
Phases in the development of ISO standards

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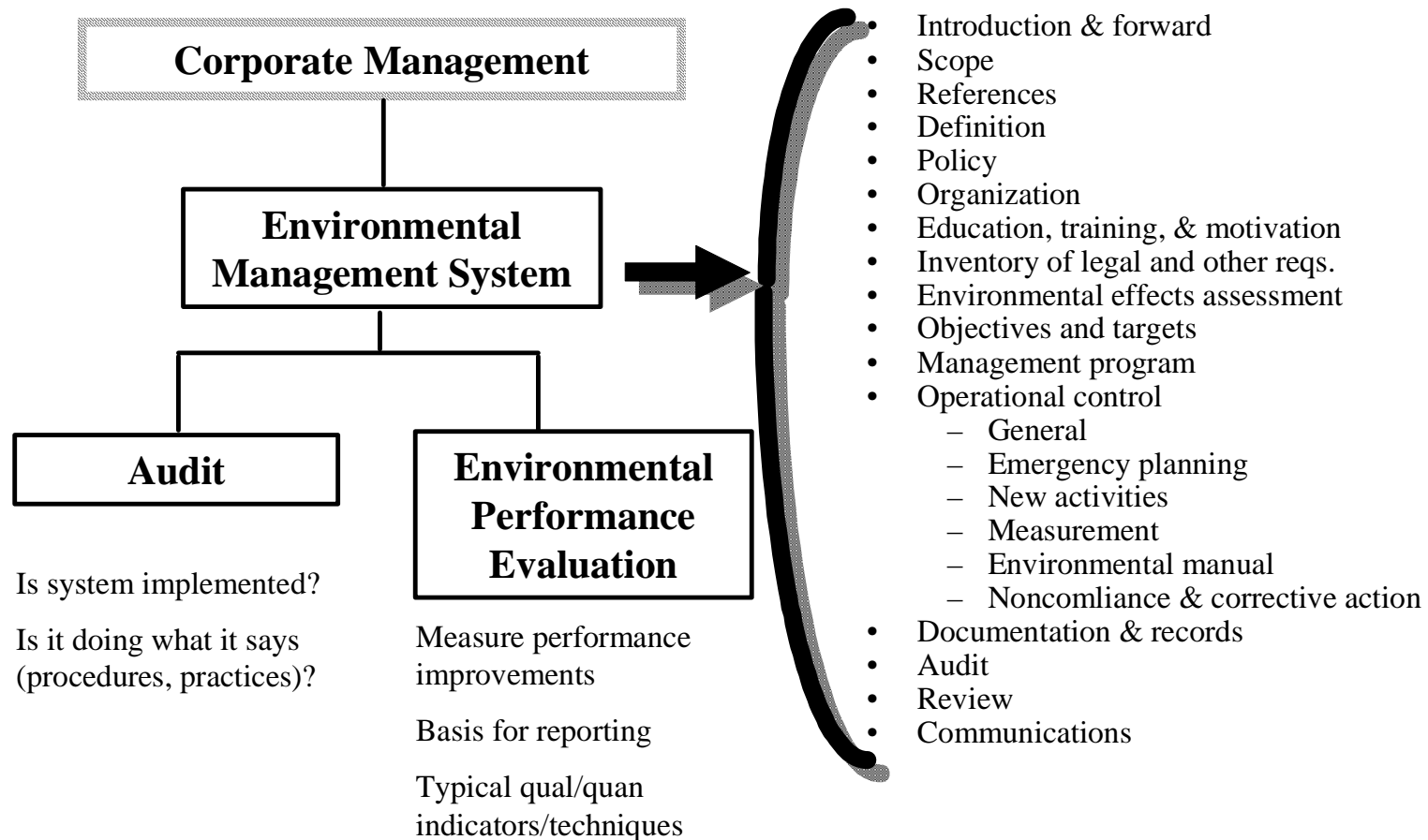Michigan Technological University

- **Phase 1: Selection of Work Item. National Committees can propose new Work Items (WI).**

- **Phase 2: Preparation of Working Draft. Working Drafts (WD) are prepared by the working groups of the subcommittees. National committees, & other experts, receive Committee Drafts.**

- **Phase 3: Committee Approval of Working Draft. A vote is taken on the Working Draft. Voters include participating members and representatives of national organizations. Vote follows hearings. Approval of Draft Standard requires a 2/3 majority of Participating Members and a 3/4 majority of all ISO member countries (Participating Members + others).**

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- **Phase 4: Ratification by all ISO members. The approved Committee Draft is then sent to all ISO members for ratification as a Draft International Standard (DIS). The voting period is six months.**

- **Phase 5: Final confirmation. Following approval by the national ISO member countries, the document is called a Final Draft International Standard (FDIS).**

- **Phase 6: Publication of the ISO Standard. Standard is published in Geneva in the official ISO languages: English, French and Russian.**

- **Phase 7: Publication in other languages other than English, French and Russian.**

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ISO Technical Committee 207

Environmental Management ISO 14000

Environmental Management System

Environmental Performance Evaluation

Environmental Auditing

Life-Cycle Assessment

Environmental Labeling

Environmental Aspects in Product Standards

Organizational Evaluation

Product Evaluation

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Environmental Management System

Corporate Management

Environmental Management System

Audit

Environmental Performance Evaluation

Is system implemented?

Is it doing what it says (procedures, practices)?

Measure performance improvements

Basis for reporting

Typical qual/quan indicators/techniques

- Introduction & forward
- Scope
- References
- Definition
- Policy
- Organization
- Education, training, & motivation
- Inventory of legal and other reqs.
- Environmental effects assessment
- Objectives and targets
- Management program
- Operational control
  - General
  - Emergency planning
  - New activities
  - Measurement
  - Environmental manual
  - Noncomliance & corrective action
- Documentation & records
- Audit
- Review
- Communications

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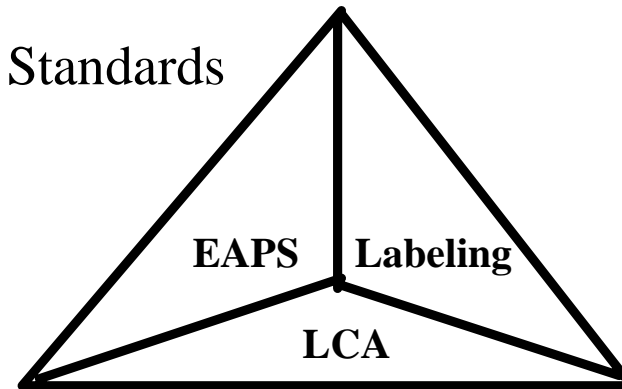Michigan Technological University

Organizational Environmental Management System

- **Helps organizations manage environmental aspects of operations (does not detail desirable goals).**

- **Provides construct for demonstrating commitment to environmental protection and continual improvement (similar to ISO 9000 demonstration of consistency of processes).**

- **Is usable by all countries & organizations (universal)**
  - **No startup performance test.**
  - **No final performance goal.**
  - **No prescribed performance improvement rate.**
  - **No mandated policy options (governmental or organizational).**

- **Registration will require evidence of**
  - **implementation of Environmental Management System,**
  - **compliance to applicable regulations (local/national),**
  - **commitment to continual improvement (in broad sense).**

EMS Tools

- Environmental Aspects in Product Standards
  - Guide for standard writers only?
  - DFE primer?
  - Dependence on LCA?
  - Dependence on lists?

- Labeling
  - Which need will it address? (self declaration, seal, report card)
  - Dependence on LCA?
  - FTC approach: "State the facts"?

- LCA
  - Codify ongoing work?
  - Develop guidance on concept and applications? (so other areas can use LCA)
  - Impact analysis most problematic!

EAPS Labeling

LCA

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Overview of the ISO 14000 Family

- **The ISO 14000 family of environmental management standards are summarized in the following table.**

ISO No.	Title of International Standard / Guideline / Technical Report	Publ. Date
ISO 14001	Environmental management systems - Specification with guidance for use	Sept. 1996
ISO 14004	Environmental management systems - General guidelines on principles, systems and supporting techniques	Sept. 1996
ISO/AWI 14004	Revision of ISO 14004:1996	TBD
ISO 14010	Guidelines for environmental auditing - General principles	October 1996

ISO 14011	Guidelines for environmental auditing - Audit procedures - Auditing of environmental management systems	October 1996
ISO 14012	Guidelines for environmental auditing - Qualification criteria for environmental auditors	October 1998
ISO 14015	Environmental management - Environmental assessment of sites and organizations (EASO)	Nov. 2001
ISO/DIS 19011	Guidelines for quality and/or environmental management systems auditing	July 2001
ISO 14020 2nd Edition	Environmental labels and declarations - General principles	Sept. 2000
ISO 14020: 1998/DAM1	Draft amendment 1 to ISO 14020:1998	Dec. 1998
ISO 14021	Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)	Sept. 1999

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ISO 14024	Environmental labels and declarations - Type I environmental labelling - Principles and procedures	April 1999
ISO/TR 14025	Environmental labels and declarations - Type III environmental declarations	March 2000
ISO 14031	Environmental management - Environmental performance evaluation - Guidelines	Nov. 1999
ISO/TR 14032	Environmental management - Examples of environmental performance evaluation	1999
ISO 14040	Environmental management - Life cycle assessment - Principles and framework	June 1997
ISO 14041	Environmental management - Life cycle assessment - Goal and scope definition and inventory analysis	October 1998
ISO 14042	Environmental management - Life cycle assessment - Life cycle impact assessment	March 2000

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ISO 14043	Environmental management - Life cycle assessment - Life cycle interpretation	March 2000
ISO/WD TR 14047	Environmental management - Life cycle assessment - Examples of application of ISO 14042	1999
ISO/CD TR 14048	Environmental management - Life cycle assessment - Life cycle assessment data documentation format	1999
ISO/TR 14049	Environmental management - Life cycle assessment - Examples of application of ISO 14041 to goal and scope definition and inventory analysis	March 2000
ISO 14050	Environmental management - Vocabulary	May 1998
ISO 14050: 1998/DAM1	Draft amendment 1 to ISO 14050:1998	Dec. 1999

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ISO/TR 14061	Information to assist forestry organizations in the use of Environmental Management System standards ISO 14001 and ISO 14004	Dec. 1998
ISO/AWI 14062	Guidelines for integrating environmental aspects into product development	TBD
ISO Guide 64	Guide for the inclusion of environmental aspects in product standards	March 1997

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ISO 14000 family -- 7 Major Groups

GROUP	STANDARDS
Environmental Mgmt. Systems	ISO 14001, ISO 14004, ISO/TR 14061
Environmental Auditing	ISO 14010, ISO 14011, ISO 14012, ISO 14015, ISO 19011
Environmental labelling	ISO 14020, ISO 14021, ISO 14024, ISO/TR 14025
Environmental Performance Evaluation	ISO 14031, ISO/TR 14032
Life Cycle Assessment	ISO 14040, ISO 14041, ISO 14042, ISO 14043, ISO/TR 14047, ISO/TR 14048, ISO/TR 14049
Environmental Mgmt. Vocab.	ISO 14050
Environmental Aspects in Product Standards	ISO 14062, ISO Guide 64

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Environmental Management Systems

- **ISO 14001**
  Environmental management systems - Specification with guidance for use

  Scope: Specifies requirements for an environmental management system. Helps to formulate a policy and objectives. It applies to those environmental aspects which the organization can control and over which it can be expected to have an influence. It does not itself state specific environmental performance criteria.

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This International Standard is applicable to any organization that wishes to
- implement, maintain, & improve an environmental management system;
- assure itself of its conformance with its stated environmental policy;
- demonstrate conformance to others;
- seek certification/registration of its environmental management system by an external organization;
- make a self-determination and self-declaration of conformance with this International Standard.

All the requirements in this International Standard are intended to be incorporated into any environmental management system.

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- **ISO 14004**
  Environmental management systems - General guidelines on principles, systems, and supporting techniques

  Scope: Provides guidance on the development and implementation of environmental management systems and principles, and their coordination with other management systems.

  Guidelines are applicable to any organization, regardless of size, type, or level of maturity, that is interested in developing, implementing and/or improving an environmental management system. For use as a voluntary, internal management tool.

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- **ISO 14061
Information to assist forestry organizations in the use of Environmental Management System standards ISO 14001 and ISO 14004**

  Scope: Reference material to assist forestry organizations in the use of ISO 14001 and ISO 14004 environmental management system standards.

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Environmental Auditing

- **ISO 14010**
  Guidelines for environmental auditing - General principles

  Scope: Provides the principles of environmental auditing that are applicable to all types of environmental audits. Any activity defined as an environmental audit in accordance with this International Standard should satisfy the recommendations given in it.

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- **ISO 14011**
  Guidelines for environmental auditing - Audit procedures - Auditing of environmental management systems

  Scope: Establishes audit procedures that provide for the planning and conduct of an audit of an EMS to determine conformance with EMS audit criteria.

- **ISO 14012**
  Guidelines for environmental auditing - Qualification criteria for environmental auditors

  Scope: Provides guidance on qualification criteria for environmental auditors.

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- **ISO 14015**
  Environmental mgmt. - Environmental assessment of sites and organizations (EASO)

  Scope: Provides guidance on how to conduct an EASO through a process of identifying environmental aspects/issues and business consequences.

  Covers roles of parties to the assessment (client, assessor and assessee representative), and stages of the assessment process (planning, information gathering and validation, evaluation, and reporting).

  No guidance on initial environmental reviews, environmental audits, impact assessments, etc.

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- **ISO/DIS 19011**
  Guidelines for quality and/or environmental management systems auditing

  Scope: Provides guidance on the principles of auditing, the management of audit programs, the conduct of quality management system audits and environmental management system audits as well as the competence of quality and environmental management system auditors.

  Applicable to all organizations having a need to conduct and manage internal or external quality and/ or environmental management system audits.

Environmental labelling

- **ISO 14020**
  Environmental labels/declarations; General principles

  Scope: Establishes guiding principles for the development and use of environmental labels and declarations. It is intended that other applicable standards in the ISO 14020 series be used in conjunction with this International Standard.

  This International Standard is not intended for use as a specification for certification and registration purposes.

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- **ISO 14021**
  Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)

  Scope: Specifies requirements for self-declared environmental claims, including symbols, regarding products. It further describes selected terms commonly used in environmental claims and gives qualifications for their use. This standard also describes a general evaluation and verification methodology for self-declared environmental claims and specific evaluation and verification methods for the selected claims in this standard.

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- **ISO 14024**
  Environmental labels and declarations - Type I Environmental labelling - Principles and procedures

  Scope: Contains guiding principles and practices, criteria procedures, and guidance for certification procedures for development of multiple criteria-based, third party environmental labelling programs.

  Aimed at reducing environmental burden by promoting market-driven demand for and supply of product meeting a multiple-criteria based environmental labelling program, verified by a third party.

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- **ISO/TR 14025
Environmental labels and declarations - Type III environmental declarations**

  Scope: Identifies and describes elements and issues concerning Type III environmental declarations and corresponding programmes, including technical considerations, declaration format and communication, and administrative considerations for developing and/or issuing a Type III environmental declaration.

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Environmental Performance Evaluation

- **ISO 14031**
  Environmental mgmt. - Environmental performance evaluation - Guidelines

  Scope: Gives guidance on the design and use of environmental performance evaluation within an organization. Applicable to all organizations.

  Does not establish performance levels. Not intended for use as specification standard for certification or registration purposes or for the establishment of any management system conformance requirements.

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- **ISO/TR 14032**
  Environmental management - Examples of environmental performance evaluation

  Scope: Provides examples from real organizations to illustrate the use of the guidance in ISO 14031.

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Life Cycle Assessment

- **ISO 14040
  Environmental management - Life cycle assessment - Principles and framework**

  Scope: Specifies the general framework, principles and requirements for conducting and reporting life cycle assessment studies. Does not describe the life cycle assessment technique in detail.

- **ISO 14041
  Environmental management - Life cycle assessment - Goal and scope definition and inventory analysis**

Scope: Together with ISO 14040 specifies the requirements and procedures necessary for the compilation and preparation of the goal and scope for a Life Cycle Assessment (LCA), and for performing, interpreting, and reporting an LCI.

- **ISO 14042**
  Environmental management - Life cycle assessment - Life cycle impact assessment

  Scope: Describes and gives guidance on a general framework for impact phase of life cycle assessment (LCA), and key features and inherent limitations. It specifies requirements for conducting the impact phase.

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- **ISO 14043**
  Environmental management - Life cycle assessment - Life cycle interpretation

  Scope: Provides requirements and recommendations for conducting the life cycle interpretation phase in LCA or LCI studies.

  Does not describe specific methodologies for the life cycle interpretation phase of LCA and LCI studies.

- **ISO/WD TR 14047**
  Environmental management - Life cycle assessment - Examples of application of ISO 14042
  Scope: Not yet available.

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- **ISO/CD TR 14048**
  Environmental management - Life cycle assessment - Life cycle assessment data documentation format

  Scope: Provides information regarding the formatting of data to support life cycle assessment.

- **ISO/TR 14049**
  Environmental management - Life cycle assessment - Examples of application of ISO 14041 to goal and scope definition and inventory analysis

  Scope: Provides examples about practices in carrying out a Life Cycle Inventory analysis (LCI) as a means of satisfying certain provisions of ISO 14041.

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Environmental Mgmt. Vocabulary

- **ISO 14050
  Environmental management - Vocabulary**

  Scope: Contains definitions of fundamental terms related to environmental management, published in the ISO 14000 series of standards.

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Environmental Aspects in Product Standards

- **ISO/AWI 14062**
  Guidelines for integrating environmental aspects into product development
  Scope: Not yet available.

- **ISO Guide 64**
  Guide for the inclusion of environmental aspects in product standards

  Scope: Covers the consideration of environmental impacts in product standards. It is intended for standard writers; its purpose is:

a. to raise awareness that provisions in product standards can affect the environment in both negative and positive ways;

b. to outline the relationship between product standards and the environment;

c. to help avoid provisions in product standards that may lead to adverse environmental impacts;

d. to emphasize that addressing environmental aspects during the development of product standards is a complex process and requires balancing competing priorities; and

e. to recommend the use of life-cycle thinking and recognized scientific techniques when addressing environmental aspects of a product being standardized.

In order to achieve the purposes listed under Scope, the Guide:

a. sets forth some general considerations that should be taken into account when developing product standards that achieve a proper balance between product function and environmental impacts;

b. outlines ways in which provisions in product standards may affect the environment during the stages of a product's life cycle;

c. addresses techniques for identifying and assessing the environmental impacts of provisions in product standards;

d. highlights some ways to reduce adverse environmental impacts resulting from provisions in product standards.

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