Bharathidasan University

Programme: MSc Environmental Science and Sustainable Management

Course Title: CORPORATE ENVIRONMENTAL STRATEGIES - ISO 14000 , OSHAS and LCA
Course Code: 21PGCC07

Unit- II Tools of Corporate Environmental Management

Prof. R. Mohanraj
Dept. of Environmental Science and Management

ISO 14000 OVERVIEW

International Organization of Standardization

- ◆ ISO's mission is to promote international trade by harmonizing international standards.
- ◆ ISO had developed international standards for manufacturing, communication, trade, and management systems.

International Organization of Standardization

- The ISO began in 1947 to "facilitate the international coordination and unification of industrial standards"
- The International Organization for Standards is a worldwide federation of standards bodies and is the world's largest developer of standards.
- Currently, there are over 164 members
- In the last 60 years, more than 15,000 standards have been published

History of ISO14000

•In June 1992, the British Standards Institute published BS 7750, the first Environmental Management Systems standard.

•In 1996, the International Organization for Standardization published standard 14001 Environmental Management Systems – Requirements with Guidance for Use

•ISO 14001 was first published in September 1996 and amended in November 2004. It was created and amended by Technical Committee ISO/TC207, Environmental Management, Subcommittee SC1 Environmental Management Systems.

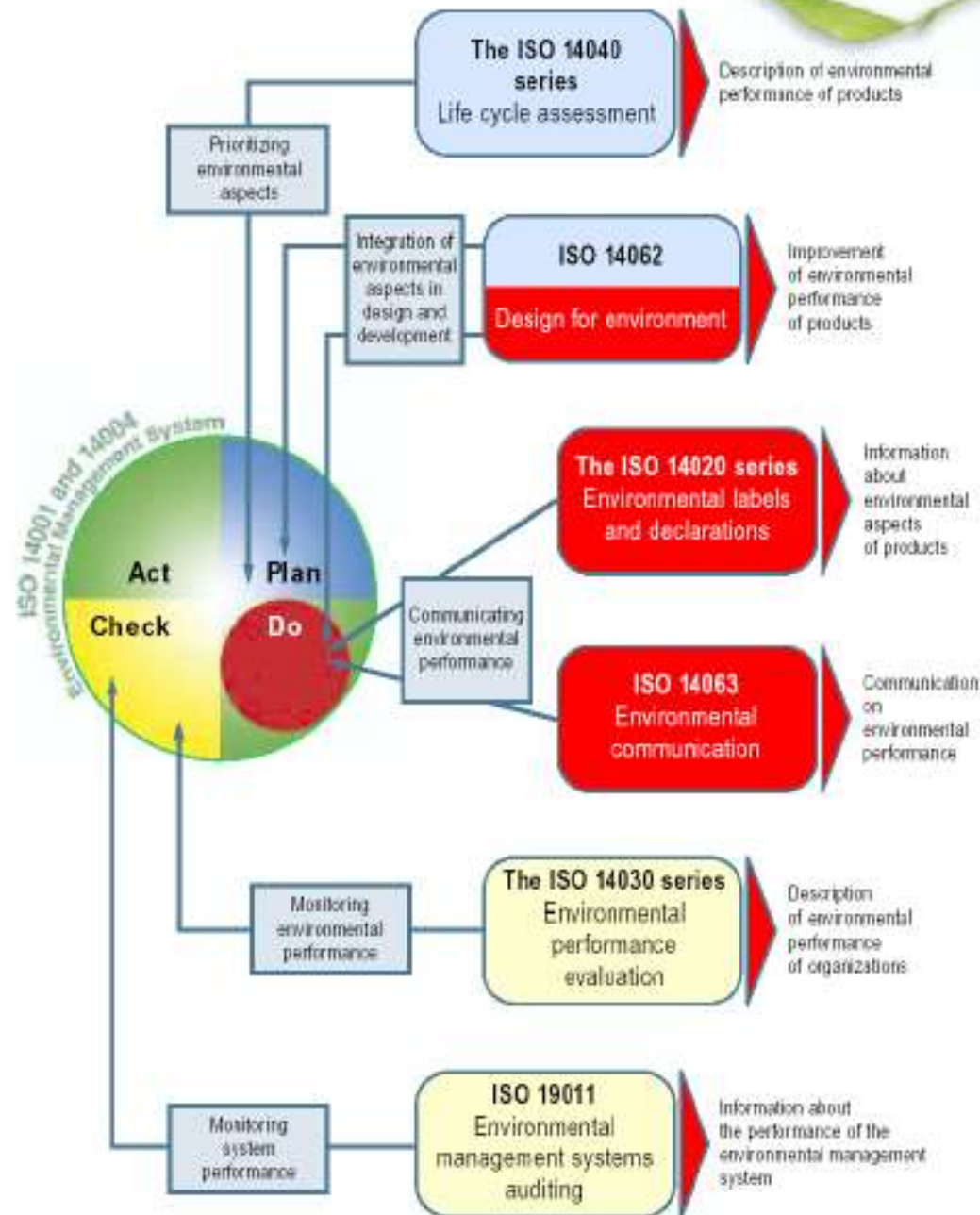| 1992	• BS 7750 standard launch • Declaration of Rio de Janeiro on Environment and Development
1993	• Committee is created to develop ISO 14000 framework • The European Commision developed EMAS
1996	• ISO publishes the first version of ISO 14001:1996
2004	• ISO updates the Environmental Management System to ISO 14001:2004 revision
2015	• ISO updates the Environmental Management System to ISO 14001:2015 revision

History of ISO 14001

ISO 14000--Environmental Management Systems Standards

- ISO 14000 contains 6 components
  - Environmental Management Systems (14001,14002, 14004)
  - Environmental Auditing Requirements (14010, 14011, 14012)
  - Environmental Performance Evaluation (14031)
  - Life Cycle Assessment (14040, 14041,14042, 14043)
  - Environmental Labeling (14020, 14021, 14022, 14023, 14024, 14025)

  - *__ISO 14001 is the only standard intended for registration by third parties. All the others are for guidance.__*

The ISO 14000 model

The ISO 14040 series
Life cycle assessment
→ Description of environmental performance of products

Prioritizing environmental aspects

Integration of environmental aspects in design and development

ISO 14062
Design for environment
→ Improvement of environmental performance of products

ISO 14001 and 14004 Environmental Management System

Act | Plan
Check | Do

The ISO 14020 series
Environmental labels and declarations
→ Information about environmental aspects of products

Communicating environmental performance

ISO 14063
Environmental communication
→ Communication on environmental performance

Monitoring environmental performance

The ISO 14030 series
Environmental performance evaluation
→ Description of environmental performance of organizations

Monitoring system performance

ISO 19011
Environmental management systems auditing
→ Information about the performance of the environmental management system

ISO 14000 Standards

- Environmental Management Systems (EMS)
  - Provides requirements for developing and implementing an EMS
- Environmental Auditing
  - Provides requirements for principles of environmental auditing, guidelines for auditing EMSs, and qualification criteria for environmental auditors.

ISO 14000 Standards

- Environmental Performance Evaluation
  - Provides a process to measure, analyze, assess, and describe an organization's environmental performance against agreed criteria for appropriate management purposes.

- Life Cycle Assessment
  - Provides a tool for evaluating the environmental attributes associated with a product, process, or service.

ISO 14000 Standards

- ◆ Environmental Labeling
  - ■ Provides requirements for three types of labels
    - ● seal of approval
    - ● single-claim labels
    - ● environmental report card
- ◆ Environmental Aspects in Product Standards
  - ■ Is intended to raise awareness the product design provisions can affect the environment.

What is an EMS?

◆ "The part of an overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy."

Unique and important characteristics of ISO 14001 are:

It is **comprehensive: all members of the Organization participate in environmental** protection, the environmental management system considers all stakeholders, and there are processes to identify all environmental impacts.

It is **proactive: it focuses on forward thinking and action instead of reacting to** command and control policies.

It is **a systems approach: it stresses improving environmental protection by using a** single environmental management system across all functions of the Organization.

EMS Framework
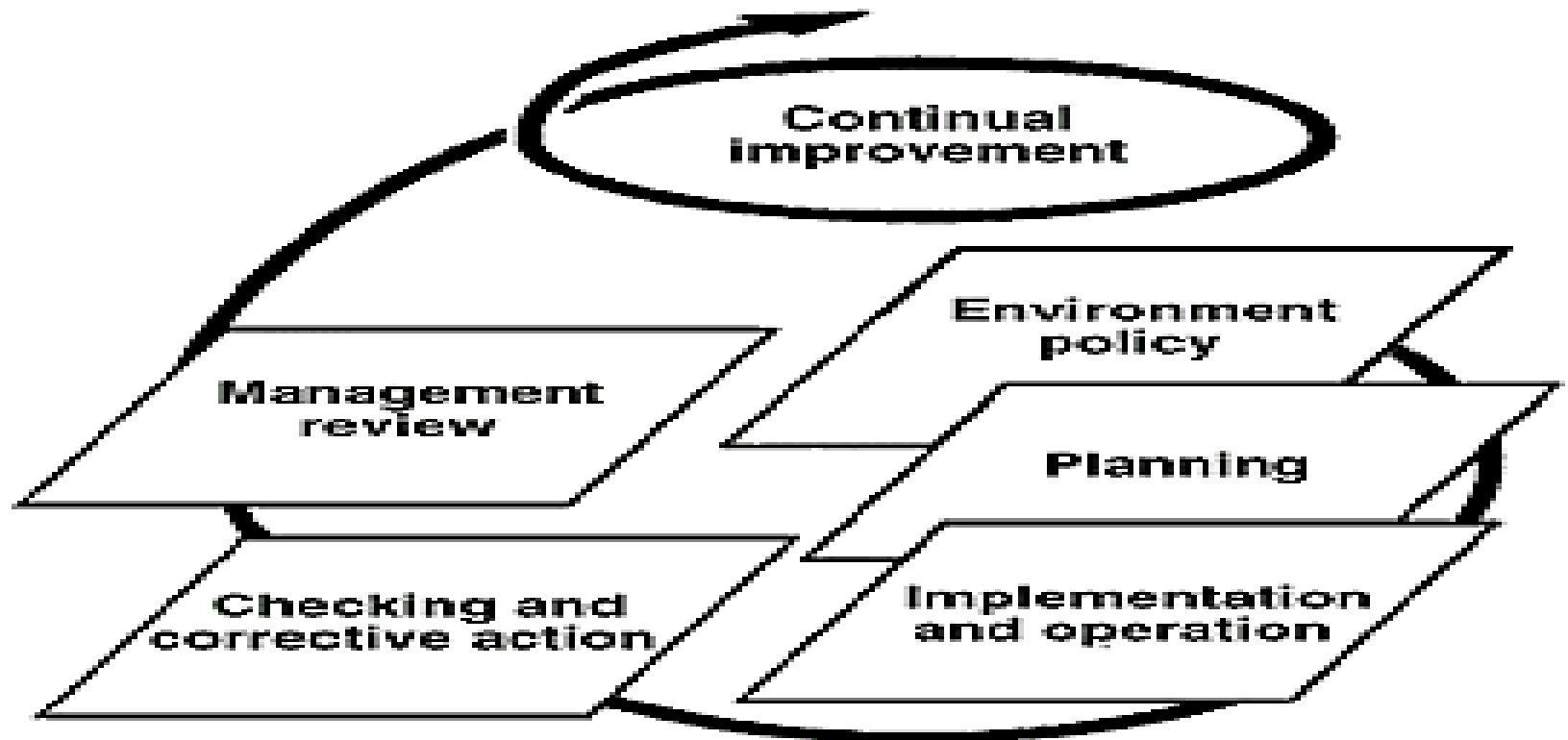
EMS Framework
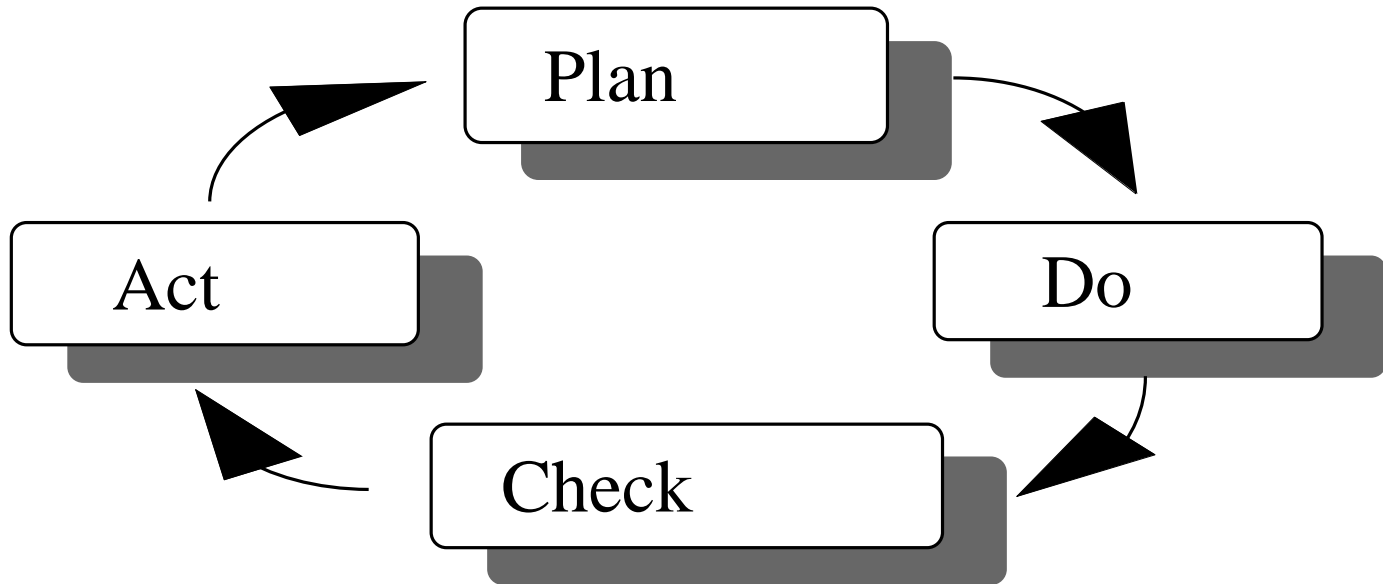
Plan

- Where are we, where do we want to go?
  - Environmental policy
  - Identify environmental aspects and impacts
  - Identify legal and other requirements
  - Significance determination
  - Set objectives and targets
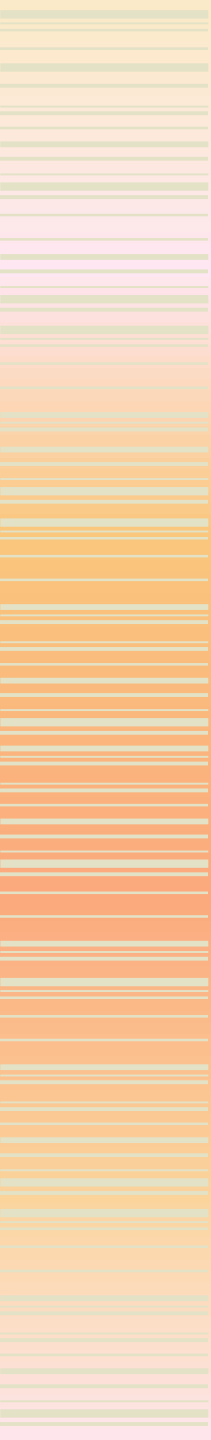 - Establish environmental programs

Do

- Put programs and resources in place to get where you want to go.
  - Structure and responsibility
  - Training
  - Communication
  - EMS Documentation and Records
  - Operational Control
  - Emergency preparedness and response

Check

- Ensure your goals are met
    - Monitor and measure
    - Identify nonconformances
    - Corrective and preventive action
    - Audit and assess

Act

- Improve system when, and if, needed
  - Management review

Key Elements
of an
EMS

Environmental Policy

- Appropriate to the nature, scale and environmental impacts of activities, products, or services
- Commitment to continual improvement and P2
- Commitment to comply with regulations
- Provides framework for setting and reviewing objectives and targets
- <u>Documented</u>, implemented, and maintained and communicated to all employees
- Available to public

Aspects

- Definition—An element of an organization's activities, product or services that can interact with the environment. Could be beneficial or harmful.

Impacts

- Environmental Impact—Any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization's activities, products or services.

Environmental Aspects/Impacts

ASPECTS

- VOC emissions

- Wastewater discharges

- Spills and leaks

- Energy use

IMPACTS

- Degradation of air quality

- Degradation of water quality

- Soil and groundwater contamination

- Green house effect

Legal Requirements

- For every aspect or its associated impacts understand regulatory and other commitments in practical sense
- Important to understand the law and what it means to different workers
- Who needs to know what level of detail
- Must be kept up-to-date

Significance

- A procedure to rate the impacts and capture the potential harm to the environment.
- Factors can include:
  - Frequency
  - Duration
  - Extent
  - Severity

Objectives/Targets

◆Objectives and targets are established for the aspects that have significant impacts.

◆Objectives--overall environmental goal

◆Targets--detailed performance requirement

◆<u>Documented</u>

Objectives/Targets

OBJECTIVES

- Reduce energy use

- Reduce use of hazardous chemicals

- Reduce hazardous waste generation

TARGETS

- Reduce electricity use by 10% in 5 years

- Reduce high VOC paints by 15% in 3 years

- Reduce solvent waste by 10% in 3 years

Environmental Management Program

- ◆Describes how company will achieve objectives and targets
- ◆Designates responsibility
- ◆Defines the means and time frame
- ◆Integrate with existing programs and business plans

Structure
and
Responsibility

◆Top management support

◆Roles, responsibility, and   authority well defined, communicated, and <u>documented</u>

◆Ensures that EMS requirements are established, implemented, and maintained

◆Reports on the performance of the EMS to top management

Training, Awareness, and Competence

◆Identify training needs

◆Establish training and awareness procedures

◆Match training to potential environmental impact

◆Track effectiveness

◆Improve training as needed

Communication

- Procedures for internal and external communication

- Internal--between levels and functions of the company

- External--receive, <u>document</u>, and respond to relevant communication from external parties

EMS Documentation

- ◆Describes the core elements of the EMS such as the policy, objectives and targets, structure and responsibility
- ◆Provides direction to related documentation such as training records

Document Control

- ◆ Have procedures for document control
- ◆ Specific location for documents
- ◆ Periodic review of documents
- ◆ Documents are current--obsolete versions are removed

Operational Control

◆Decide which activities need <u>documented</u> procedures

  ■Risk/Complexity of Activity

  ■Skills/training

  ■Degree of frequency

◆Procedures and requirements for suppliers and contractors

Emergency Preparedness and Response

- Procedure for identifying potential and response to accidents
- Identify potential emergencies and accidents
- Reduce potential for accidents
- Update existing emergency plans
- Conduct training for responsible personnel
- Emergency drills

Monitoring and Measurement

◆ <u>Documented</u> procedure to gauge environmental performance

◆ Analyze root causes of problems

◆ Identify areas where corrective action is needed

◆ Improve performance

◆ Equipment calibration

◆ <u>Documented</u> procedure for evaluating environmental compliance

Nonconformance and Corrective and Preventive Action

◆Develop procedures for investigating, correcting, and preventing problems

◆Assign responsibility and authority for handling, investigating, and mitigating nonconformance

◆Revise procedures or other EMS documentation based on corrective action

Records

- Procedures for identification, maintenance and disposition of records

- Determine their retention time

- Set up a good storage and retrieval system