

Course 12:

Other standardization systems:

Environmental Management Standards (ISO 14000)

Food Safety Management Standards (ISO 22000)

Information Security Management Standards (ISO 27000)

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Lectures for second-year Master's students in Economics and
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1. Introduction: Why Standardization Beyond Quality?

While ISO 9000 focuses on *quality management*, organizations today face wider global challenges:

- Environmental sustainability
- Food safety and global supply chains
- Cybersecurity and data protection

Therefore, companies must integrate **other standardized management systems** to remain competitive, compliant, and trusted by stakeholders.

This lesson explores **three major ISO families** widely adopted internationally:

- **ISO 14000 – Environmental Management**
- **ISO 22000 – Food Safety Management**
- **ISO 27000 – Information Security Management**

2. ISO 14000 – Environmental Management System (EMS)

2.1. What is ISO 14000?

ISO 14000 is a family of standards that guides organizations in **managing their environmental responsibilities** in a systematic way.

The most widely used standard is **ISO 14001:2015**.

Objective:

- Reduce environmental impacts, improve environmental performance, and ensure regulatory compliance.

2.2. Key Principles

- **Environmental Policy:** Commitment to protection, compliance, and continual improvement.
- **Planning:** Identify environmental aspects (energy, waste, emissions) and evaluate their impacts.
- **Implementation:** Establish procedures for waste, energy, chemicals, water, etc.
- **Performance Evaluation:** Monitoring indicators (energy use, CO2 emissions).
- **Continual Improvement:** Corrective actions, audits, management reviews.

2.3. Benefits for Organizations

- Reduced waste, energy consumption, and operational cost
- Compliance with environmental regulations
- Improved corporate image and stakeholder trust
- Easier access to international markets

2.4. ISO 14001 Structure (High-Level Structure)

- Context of the organization
- Leadership
- Planning
- Support
- Operation
- Performance evaluation
- Improvement

The structure aligns with ISO 9001 and ISO 45001 (the international standard for [Occupational Health and Safety \(OH&S\) Management Systems](#)) → *Integrated Management Systems (IMS)* become easier.

3. ISO 22000 – Food Safety Management System (FSMS)

3.1. Definition

ISO 22000 establishes requirements to ensure **food safety** along the entire supply chain: “From farm to fork”.

It integrates:

- Codex HACCP principles
- Good Manufacturing Practices (GMP)
- Traceability requirements

3.2. Key Components

1. Management System

- Same logic as ISO 9001: leadership, communication, documentation, improvement.

2. Prerequisite Programs (PRPs)

- Basic hygiene and safety conditions such as:
- Cleanliness
- Pest control
- Supplier approval
- Allergen management
- Common PRPs standards include **ISO/TS 22002-x**.

3. Hazard Analysis & Critical Control Points (HACCP)

- Identify food safety hazards (biological, chemical, physical) and implement controls at critical points.

4. Interactive Communication

Between all actors:

- Farmers
- Transport
- Processing
- Distribution
- Retailers
- Consumers

5. Traceability System

Being able to identify:

- Origin of raw materials
- Flow of products
- Lot numbers
- Recall procedures

3.3. Why ISO 22000 is Important

- Reduces food contamination risks
- Builds consumer confidence
- Facilitates international trade (EU, WTO requirements)
- Ensures regulatory compliance
- Improves operational efficiency

4. ISO 27000 – Information Security Management System (ISMS)

4.1. Definition

ISO 27000 is a family of standards focusing on **information security**, covering:

- Confidentiality
- Integrity
- Availability
- The core standard is **ISO 27001**.

4.2. Key Principles

1. Risk Management Approach

Identify, assess, and treat security risks:

- Cyberattacks
- Data breaches
- System failures
- Insider threats

2. Controls (Annex A of ISO 27001)

114 controls categorized into:

- Security policies
- Human resources security
- Access control
- Cryptography
- Physical security
- Operations security
- Supplier relationships
- Incident management
- Business continuity

• 3. Documentation

- Information security policy
- Risk treatment plan
- Statement of Applicability (SoA)
- Training records
- Audit reports

• 4. Continual Improvement

- Regular reviews, audits, simulations (e.g., phishing tests), and corrective actions.

4.3. Why Organizations Implement ISO 27001

- Protect sensitive information (HR files, R&D, customer data)
- Avoid financial and reputational damage
- Enhance resilience against cyberattacks
- Meet global compliance regulations (GDPR, national cybersecurity laws)
- Increase trust with clients and partners

5. Integration of Standards: Toward an Integrated Management System (IMS)

Many organizations implement several ISO standards simultaneously. Why?

Because they share a **common High-Level Structure (Annex SL)**:

- Plan
- Do
- Check
- Act

This makes it easy to integrate:

ISO 9001 + ISO 14001 + ISO 45001 + ISO 27001 + ISO 22000

Advantages of Integration

- Reduced documentation
- Reduced audit costs
- More coherent policies
- Better global risk management
- Higher internal efficiency

6. Practical Examples and Case Studies

1. Manufacturing company

- Implements:
- ISO 14001 to reduce waste and energy
- ISO 9001 to standardize processes
- ISO 45001 to ensure worker safety

2. Food processing industry

- Applies:
- ISO 22000 for safety
- ISO 9001 for consistency
- ISO 14001 for environmental impact

3. Bank or IT company

- Implements:
- ISO 27001 to protect customer data
- ISO 9001 for service quality
- ISO 14001 for sustainability initiatives

Sectors Implementing ISO 22000 in Algeria:

- **Food Manufacturers & Processors:** Companies making and packaging food products.
- **Food Suppliers:** Providers of ingredients, raw materials, and packaging.
- **Logistics & Transport:** Companies handling distribution, storage, and transport of food.
- **Food Service:** Restaurants, hotels, and catering services

8. Conclusion

Global competitiveness requires organizations to adopt **comprehensive standardized management systems**.

The move beyond quality (ISO 9000) to **environment, food safety, and information security** reflects the complexity of modern business environments.

These standards:

- Enhance performance
- Reduce risks
- Build stakeholder trust
- Open international markets

As future managers, students must understand how these systems interact and contribute to sustainable organizational success.