

**Course objectives : FFY471, FYP350. January - March 2012**

**In principle: To learn about the supply of natural resources on the Earth and about the environmental consequences of the use and transformation of the resources.  
Natural resources are: food, water, air, minerals, and energy.  
Then also learn somewhat about the environmental systems and there functions.**

**The textbook offers overview knowledge and the problem packages will make it possible to study some issues more in depth.**

**Content in the textbook (the questions on the written exam will be picked up from these chapters and the ecotoxicology lectures.)**

Chapter 3: Ecosystems. What are they and how do they work?  
Chapter 4: Biodiversity and evolution.  
Chapter 5: Biodiversity, Species interactions, and Population control.  
Chapter 12: Food, Soil, and Pest management.  
Chapter 13: Water resources  
Chapter 20: Water pollution  
Chapter 15: Nonrenewable energy  
Chapter 16: Energy efficiency and renewable energy

**Separate element:** Ecotoxicology.

**Problem packages about**

- 1) Environmental management at local level**
- 2) Food resources**
- 3) Carbon dioxide capture**
- 4) Nuclear energy. Resources and supply.**
- 5) Nanoparticles and there health effects.**

## Lecture 1. 2012-01-18

### Environmental management on global, national and local level

1. Which organizations are involved ?
2. What do they do ?
3. How do they work?

#### Global level

Three groups:

trade organizations, governmental organizations, non-governmental organizations.

*Trade organizations:*

WTO ( World trade organization). Deals with the rules of trade between nations. Doha round going on. Environmental issues not of high priority in the WTO work

OECD (Organization for Economic Cooperation and Development). Member states are the rich countries of the world. OECD has an environmental policy committee (EPOC).

*Governmental organizations*

UN (United nations)

UNEP (United nations environment programme).  
Head quarter in Nairobi, Kenya.

Mission: To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

UNEP, established in 1973, is a major actor on the international environmental arena.

UN- UNEP has organized three world environmental summits

- 1972 in Stockholm. Starting point for the UN work on environment.
- 1992 in Rio de Janeiro. Ended in four documents; on sustainable development for forests, agenda 21, convention on climate change, convention on biological diversity.
- 2002 in Johannesburg. More on development and poverty than on protection of environment.

13 scientific centres in the UNEP organization.

- [Division of Early Warning and Assessment](#)
- [Division of Technology, Industry and Economics](#)
- [Global Programme of Action for the Protection of the Marine Environment from Land-based Activities - GPA/The Hague](#)
- [Global International Waters Assessment - GIWA](#)

- [Global Resource Information Database - GRID](#)
- [International Environment Technology Centre - IETC/Osaka-Japan](#)
- [Joint Secretariat of the International Coral Reef Initiative - ICRI/Philippines](#)
- [Post Conflict Assessment Unit /Geneva](#)
- [UNEP World Conservation Monitoring Centre - WCMC](#)
- [UNEP Collaborating Centre on Energy and Environment - UCCEE](#)
- [UNEP Collaborating Centre on Water and Environment - UCC Water](#)
- [UNEP Earth Watch Coordination Office/Geneva](#)
- [UNEP Chemicals](#)

In 1983 the world commission on environment and development (the Brundtland commission) was convened. It was the starting point of the work for sustainable development.

IPCC (International panel on climate change) established in 1988 by cooperation of the WMO, world meteorological organization, and UNEP.

The GEO (Global environment outlook) programme launched in 1995. GEO is both a process and a series of reports, analyzing environmental change, causes, impacts, and policy responses. It provides information for decision-making, supports early warning and builds capacity at the global and sub-global levels. GEO is also a communication process that aims at raising awareness on environmental issues and providing options for action.

Another UN player is  
DSD (Division for sustainable development)

#### Mission

The Division for Sustainable Development (DSD) provides leadership and is an authoritative source of expertise within the United Nations system on sustainable development. It promotes sustainable development as the substantive secretariat to the UN Commission on Sustainable Development (CSD) and through technical cooperation and capacity building at international, regional and national levels. The context for the Division's work is the implementation of Agenda 21, the Johannesburg Plan of Implementation and the Barbados Programme of Action for Sustainable Development of Small Island Developing States.

Other UN efforts.

- 1985 ozone convention
- 1989 Basel convention on hazardous wastes
- 1992 convention on biological diversity

### *Non-governmental organizations (NGOs)*

There are thousands of them. The oldest one, IUCN (the International union for the conservation of nature and natural resources) founded in 1948.

### ***Regional***

Just to mention

EU.

There is a commission for the environment in the EU.

Issues dealt with by the Environment Council include:

- Climate change
- Waste management issues
- Chemicals and pesticides
- Air pollution, such as carbon dioxide emissions from cars
- Water issues
- Soil contamination
- Natural resource issues
- Sustainable development in the Lisbon process
- Marine environmental protection
- International environmental issues, such as preparations for EU action in the United Nations

### ***National level***

The ministry of Environment has the comprehensive responsibility for the environmental work in Sweden.

They have a lot of suborganizations and agencies coordinating and promoting the environmental work. Most important is the Environmental Protection Agency (Naturvårdsverket).

A backbone of the work on the environment in Sweden is the 16 objectives formulated about ten years ago.

The Ministry of the Environment works to achieve sustainable development. The riches of nature must be used in way that will enable us to hand over a world in balance to our children and grandchildren. Priority areas in the Government's environmental policy are action to respond to climate change, support for technology with minimal environmental impact and ensuring that the Baltic and the Skagerrak and Kattegat are living seas. Market economy institutions, economic instruments and research and new technology are important tools in the work of the Ministry.

### **The 16 Environmental Quality Objectives are:**

- Reduced Climate Impact
- Clean Air
- Natural Acidification Only
- A Non-Toxic Environment

- A Protective Ozone Layer
- A Safe Radiation Environment
- Zero Eutrophication
- Flourishing Lakes and Streams
- Good-Quality Groundwater
- A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos
- Thriving Wetlands
- Sustainable Forests
- A Varied Agricultural Landscape
- A Magnificent Mountain Landscape
- A Good Built Environment
- A Rich Diversity of Plant and Animal Life

## **Agencies**

Agencies reporting to the Ministry of the Environment

- **The National Board of Housing, Building and Planning (Boverket)**

The National Board of Housing, Building and Planning is the agency for community planning, urban development, building and housing. The Agency promotes a human housing and building environment with reasonably priced housing and construction that is efficient, safe, healthy and environmentally sustainable. The National Board of Housing, Building and Planning also promotes the sustainable use of land and water.

- **The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)**

The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) supports and disseminates information on research within its areas of responsibility. The Council promotes growth within the framework of an ecologically sustainable development.

- **The National Chemicals Inspectorate (KemI)**

The National Chemicals Inspectorate (KemI) works to prevent damage to people and the environment caused by chemical and biotechnological products. The vision is for future generations to be able to live healthily in a good environment in a sustainable society.

- **The Board of the Swedish Nuclear Waste Fund (Kärnavfallsfonden)**

The Board of the Swedish Nuclear Waste Fund administers funds set aside to finance future costs for dealing with spent nuclear fuel and other radioactive waste.

- **The National Land Survey (Lantmäteriverket)**

The National Land Survey is the central agency for central government land surveying. The agency provides society with general maps and other fundamental property and landscape information. The National Land Survey also promotes

effective property distribution within the framework of land parcelling. The agency is also responsible for place-names.

- **The Swedish Environmental Protection Agency (Naturvårdsverket)**

The Swedish Environmental Protection Agency is a co-ordinator and promoter of environmental work, nationally, within the EU and internationally. The agency is responsible for producing and disseminating information in the field of the environment, it drafts proposals for objectives, strategies of measures and policy levers in environmental policy and implements environmental policy decisions. Its task is also to follow up and evaluate the environmental situation and work being undertaken on the environment, to be used as a basis for the continued development of environmental policy.

- **The Swedish Geotechnical Institute (Statens geotekniska institut)**

The Swedish Geotechnical Institute (SGI) is responsible for building up a body of Swedish geotechnical expertise and for dissemination of this information. The Institute gives geotechnological advice to central government agencies responsible for areas relating to the environment, infrastructure, spatial planning and building. The SGI has special responsibility for issues pertaining to land-falls and land-slides.

- **The Swedish National Water Supply and Sewage Tribunal (Statens va-nämnd)**

The Swedish National Water Supply and Sewage Tribunal deals with cases under the Act concerning public water and sewage systems and the Act concerning public heating systems.

- **The Swedish Meteorological and Hydrological Institute (SMHI)**

The Swedish Meteorological and Hydrological Institute (SMHI) provides climate- and waterdependent operations with background material to be used as a basis for planning and decision-making. The agency acts as a central government expert body on meteorology, hydrology and oceanography and is a resource in environmental work.

- **The Swedish Radiation Safety Authority**

The Swedish Radiation Safety Authority has been a managing authority under the Ministry of the Environment since 1 July 2008, with national collective responsibility within the areas of radiation protection and nuclear safety.

- **Swedesurvey AB**

Swedesurvey AB exports Swedish expertise in the land survey area focusing on real property systems, geographical information, real property information and geographical information technology.

Swedish environmental code (miljöbalken) from 1999.

### *Local - national level*

If we go downwards from the national level, then the next important operator concerning environmental issues is the county administration board (länsstyrelsen). In Sweden they work with

- monitoring, leaves to appeal, supervision
- coordination, dissemination of know-how
- the follow-up of permissions

### ***Local level***

Assume that you are employed in an organization and the organization wants to have an environmental certification.

What to do ?

What does it mean to be certified ?

What to do ?

The certification brings you in contact with an Environmental Management Standard (EMS). The standard originates from ISO (International organization for standardization). The most relevant standard in this case is ISO14001.

ISO14001 specifies the actual requirements for an environmental management system.

Important parts of the environmental management system are

- to distribute the responsibility to the people of the organization
- to prioritize environmental objectives
- to communicate the environmental work

ISO has many other standards dealing with specific environmental issues. The intention of ISO 14001:2004 is to provide a **framework for a holistic, strategic approach** to the organization's environmental policy, plans and actions.

ISO 14001:2004 gives the **generic requirements** for an environmental management system. The underlying philosophy is that whatever the organization's activity, the requirements of an effective EMS are the same.

Because ISO 14001:2004 does not lay down levels of environmental performance, the standard can be implemented by a **wide variety of organizations**, whatever their current level of environmental maturity.

However, a **commitment to compliance** with applicable environmental legislation and regulations is required, along with a commitment to **continual improvement** – for which the EMS provides the framework

This has the effect of establishing a **common reference** for communicating about environmental management issues between organizations and their customers, regulators, the public and other stakeholders.

It should be emphasized that the certification has nothing to do with low levels of emission or a restricted use of natural resources. The certification is related to the work with and the managing of the environmental issues within the organization.

The procedure of planning the certification procedure and its content can be best illustrated by an example. The following link is about the certification for the company Tektronix.

<http://www.tek.com/corporate-information/2009-environmental-annual-report>

- **Establishment of an appropriate environmental policy** that is documented and communicated to employees and made available to the public, and which includes a commitment to continual improvement and pollution prevention, regulatory compliance and a framework for setting objectives;
- **A planning phase** that covers the identification of the environmental aspects of the organization's activities, identification and access to legal requirements, establishment and documentation of objectives and targets consistent with the policy, and establishment of a program for achieving said targets and objectives (including the designation of responsible individuals, necessary means and time frames);
- **Implementation and operation of the EMS** including the definition, documentation and communication of roles and responsibilities, provision of appropriate training, assurance of adequate internal and external communication, written management system documentation as well as appropriate document control procedures, documented procedures for operational controls, and documented and communicated emergency response procedures;
- **Checking and corrective action procedures**, including procedures for regular monitoring and measurement of key characteristics of the operations and activities, procedures for dealing with situations of non-conformity, specific record maintenance procedures and procedures for auditing the performance of the EMS;
- **Periodic management reviews of the overall EMS** to ensure its suitability, adequacy and effectiveness in light of changing circumstances.

What to do to fulfill the requirement in ISO14001 ?

- identify and control the **environmental impact** of its (the organization) activities, products or services, and to
- **improve** its environmental performance continually, and to implement a **systematic approach** to setting environmental objectives and targets, to achieving these and to demonstrating that they have been achieved.

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If the organization has obtained an ISO14001 certification they can consider it as an internal quality control, an verification that environmental issues are handled in a proper way.

When an organization is certified it must be prepared for audition (revision). It must be checked that they follow there commitments.

An audit can be done internally ( by independent people in the organization)  
externally ( by consultants or other competent people)

There can be a  
system revision ( the organization is checked from a macro perspective)  
detailed revision ( the results of the environmental work is investigated)

### **Environmental management system**

If the organization wants to go further they can apply for an EMAS certification.

EMAS is an EU-regulation with rules for environmental management systems design and content. EMAS is based upon ISO14001.

EMAS require that the organization make their work public.

EMAS is established for the evaluation and improvement of the environmental performance of organizations and the provision of relevant information to the public.

Environmental reports from Swedish EMAS certified organizations can be seen [here](#).

SWEDAC,  
the Swedish Board for Accreditation and Conformity Assessment, is a public authority under the Ministry for Foreign Affairs. SWEDAC is the national accreditation body, assessing the competence of laboratories, certification and inspection bodies

Swedac has accredited other bodies to promulgate certifications.