

# HUMAN IMPACT ON THE NATURAL ENVIRONMENT



(IMPACT) (ECOSYSTEMS) (AGRICULTURE)  
(ENERGY) (FISHERIES) (FORESTRY) (TOURISM)  
(TRANSPORTATION)

## Human impact on the natural environment

Natural environment is of crucial importance for social and economic life. We use the living world as

- a resource for food supply
- an energy source
- a source for recreation
- a major source of medicines
- natural resources for industrial products

In this respect the diversity of nature not only offers man a vast power of choice for his current needs and desires. It also enhances the role of nature as a source of solutions for the future needs and challenges of mankind.

# State of ecosystems, habitats and species

In the past, human interaction with nature, although often having a disruptive effect on nature, often also enriched the quality and variety of the living world and its habitats - e.g. through the creation of artificial landscapes and soil cultivation by local farmers.

Today, however, human pressure on natural environments is greater than before in terms of magnitude and efficiency in disrupting nature and natural landscapes, most notably:

- intensive agriculture replacing traditional farming; this combined with the subsidies of industrial farming has had an enormous effect on western rural landscapes and continues to be a threat.
- mass tourism affecting mountains and coasts.
- the policies pursued in the industry, transport and energy sectors having a direct and damaging impact on the coasts, major rivers (dam construction and associated canal building) and mountain landscapes (main road networks).
- the strong focus of forestry management on economic targets primarily causes the decline in biodiversity, soil erosion and other related effects.

The clearest manifestations of the degradation of the natural environment are:

- *Reduction and fragmentation of habitats and landscapes*  
The expansion of humans activities into the natural environment, manifested by urbanisation, recreation, industrialisation, and agriculture, results in increasing uniformity in landscapes and consequential reduction, disappearance, fragmentation or isolation of habitats and landscapes.  
It is evident that the increasing exploitation of land for human

use greatly reduces the area of each wildlife habitat as well as the total area surface throughout Europe. The consequences are:

- A decreased species diversity, due to reduced habitable surface area which corresponds to a reduced "species carrying capacity".
- The reduction of the size of habitats also reduces the genetic diversity of the species living there. Smaller habitats can only accommodate smaller populations, this results in an impoverished gene pool.
- The reduction of genetic resources of a species diminishes its flexibility and evolutionary adaptability to changing situations. This has significant negative impacts on its survival.

The conditions under which the reduction of habitats often occur prevent living organisms making use of their normal ways to flee their threatened habitat. Those escape routes include migration to other habitats, adaption to the changing environment, or genetic interchange with populations in nearby habitats. Of particular concern is:

- The abrupt nature of human intervention; human projects are planned and implemented on a much shorter time scale than natural processes;
  - Furthermore human intervention, such as the construction of buildings, motorways or railways results in the fragmentation of habitats, which strongly limits the possibility for contact or migration among them;
  - In extreme cases even the smallest, narrowest connections between habitats are broken off. Such isolation is catastrophic for life in the habitat fragments.
- *Loss of Species of Fauna and Flora*  
Although relatively few species of Europe's fauna and flora have actually become totally extinct during this century, the continent's biodiversity is affected by decreasing species numbers and the loss of habitats in many regions. Approximately 30 % of

the vertebrates and 20 % of the higher plants are classified as "threatened". Threats are directly linked to the loss of habitats due to destruction, modification and fragmentation of ecosystems as well as from overuse of pesticides and herbicides, intensive farming methods, hunting and general human disturbance. The overall deterioration of Europe's air and water quality add to the detrimental influence.

---

## Agriculture

Europe's natural environment is inextricably linked with agriculture and forestry. Since agriculture traditionally depends on sound environmental conditions, farmers have a special interest in the maintenance of natural resources and for centuries maintained a mosaic of landscapes which protected and enriched the natural environment.

As a result of needs for food production since the 1940s, policies have encouraged increased production through a variety of mechanisms, including price support, other subsidies and support for research and development. The success achieved in agricultural production has however entailed increased impact on the environment.

Modern agriculture is responsible for the loss of much wildlife and their habitats in Europe, through reduction and fragmentation of habitats and wildlife populations. The drainage of wetlands, the destruction of hedgerows and the intensive use of fertilizers and pesticides can all pose a threat to wildlife. Highly specialised monoculture are causing significant loss in species abundance and diversity. On the other hand increased production per hectare in intensive areas, raising of livestock volume, and lower prices for agricultural products also caused marginalization of agricultural land,

changing the diversity of European landscapes into the direction of two main types: Intensive Agriculture and Abandoned land.

## Energy

Abandonment can be positive for nature, but this is not necessarily so. Land abandonment increases the risk of fire in the Mediterranean Region, causes a decline of small-scale landscape diversity and can also cause decrease in species diversity.

All energy types have potential impacts on the natural environment to varying degrees at all stages of use, from extraction through processing to end use. Generating energy from any source involves making the choices between impacts and how far those impacts can be tolerated at the local and global scale. This is especially of importance for nuclear power, where there are significant risks of radioactive pollution such as at Chernobyl.

Shell Oil Company and IUCN have jointly drafted environmental regulations for oil-exploitation in Arctic areas of Siberia. Other oil companies are aware of this and use these environmental regulations voluntarily for developing oil fields.

Into the future the sustainability of the natural environment will be improved as trends away from damaging energy uses and extractive methods reduce and whilst real cost market forces and the polluter pays principle take effect.

---

## Fisheries

The principle of the fisheries sector is towards sustainable catches of wild aquatic fauna. The principle environmental impact associated with fisheries activities is the unsustainable harvesting of fish stocks

and shellfish and has consequences for the ecological balance of the aquatic environment. The sector is in a state of "crisis", with over capacity of the fleet, overexploitation of stocks, debt, and marketing problems.

Growing aquaculture industry may increase water pollution in western Europe, and is appearing to be a rising trend in the Mediterranean and Central/East Europe.

Fishing activities have an impact on cetaceans and there is concern that large numbers of dolphins, and even the globally endangered Monk seal, are being killed.

---

## Forestry

Compared to other landuses, forest management has the longest tradition in following sustainable principles due to which over 30% of Europe is still covered with trees. Without such an organised approach, forests are likely to have already disappeared from Europe's lowlands. However, as an economic sector, forestry has also impacted severely on the naturalness of Europe's forests: soils have been drained, pesticides and fertilizers applied, and exotic species planted. In many areas monocultures have replaced the original diverse forest composition. Monocultures are extremely sensitive to insect infestations, fires or wind, and so can lead to financial losses as well as biological decline. The inadequate afforestation practices characterize new trends in impacting on the sustainability of the natural environment.

---

## Industry

Almost all forms of industry have an impact on the natural environment and its sustainability. The impact varies at different

stages in the life cycle of a product, depending upon the raw materials used through to the final end use of the product for waste residue, re-use or recycling. Industrial accidents and war damage to industrial plants can also endanger the natural environment.

---

## **Tourism and Recreation**

Tourism and recreation impact in various ways on the natural environment. On the one hand, natural areas form the very basis of many touristic attractions by highlighting scenic value or exceptional encounters with fauna and flora. However, some forms of tourism can be extremely detrimental to ecologically sensitive areas, resulting in habitat degeneration or destruction, in the disturbance or hunting even rare or threatened species. The pressure from short holiday seasons and specific, sometimes small, locations of touristic interest result in conflicting land-uses, such as in the Alpine regions, at Mediterranean beaches and along many banks of inland waters.

---

## **Transport and Infrastructure**

Transport is perhaps the major contributor to pollution in the world today, particularly global environmental issues such as the greenhouse effect. The key impacts of transportation include fragmentation of habitats and species and genetic populations, disruption of migration and traffic mortalities to wildlife. Since the 1970s transport has become a major consumer of non-renewable resources, 80% of oil consumption coming from road transport.

[\[top\]](#)

# Back to Biology Topics Outline

