

## Plants

### Impacts on ecosystems

#### Deforestation

Farming also means exploitation of forests. There are many reasons for deforestation: timber trade, exploitation of ore deposits, urbanisation and use of land as farmland or pasture. Unfortunately, for many poor countries, high-quality wood from the forests is one of the few assets available to develop their economy. And often we see indiscriminate deforestation being carried out, which causes huge damages to the environment and to mankind. For a sustainable use of the forestry resources, all the advantages and drawbacks should at least be assessed before pulling down a forest. Then, if one decides to pull it down, one should consider replanting either the same area or other areas, so that the total amount of forests on Earth does not change with time.

The effects of the loss of whole forests are particularly harmful and involve, among other things:

- loss of biodiversity. For instance, the Tropical forest (one of the most at risk), that contains over two thirds of the animal and vegetal species of our planet, is a huge reservoir of genetic diversity, which can be used to obtain new, more productive or better-quality crops and active agents for new drugs.
- negative effects on the soil. Once the vegetal coating has been removed, the soil becomes less fertile and more vulnerable to the eroding action of winds and water.
- increased concentration of carbon dioxide in the atmosphere. Through the photosynthesis, the forest is a natural reservoir for the absorption of atmospheric carbon dioxide (see the Greenhouse Effect under Atmosphere);
- repercussions on the water cycle and risk of desertification in some areas;
- negative and often irreversible social effects for the indigenous communities that live on the products of forest ecosystems.

The destruction of forests, especially Tropical forests, has been attached “global” importance over the last few decades because of its indirect effects on the Earth’s climate. Burning or cutting down trees, leaving them to rot on the place, has a double effect: on one side, the combustion or decomposition processes release carbon dioxide, while, on the other side, the trees are prevented from taking in carbon dioxide from the atmosphere and releasing oxygen through the photosynthesis. In addition, the soil, deprived of its vegetal coating, reflects the sunrays better, thus further increasing the greenhouse effect. At present, the emissions of carbon dioxide caused by deforestation and changes in the use of the soil have been estimated, even if very approximately, to amount to about 1.6 billion tons of carbon a year, while those caused by combustion are approximately 6 billion.

#### Destructive fires

Along with deforestation for the use of wood by man, fires are one of the biggest causes of the disappearance of the forestry. Every year, 10 million hectares of boreal forests, 2 of temperate forests, 0.6 of Mediterranean forests, 40 of Tropical forests and 10 billion hectares of savannah are affected by fires. The reasons of these fires are mainly arson (wilful fires), negligence (wilful fires) and natural factors (lightning and others). The rate at which a wood burns depends on many factors: the type of undergrowth, the flammability and combustion speed of the wooden biomass of the wood, the climatic conditions (for instance, in our country, as well as in all the Mediterranean countries, the summer season is the one most at risk), and others.

## The death of forests

Man can damage forests either directly, through deforestation and fires, or indirectly, through some of his productive activities. Depletion is actually a crisis event of forest environments in temperate areas, whose causes are due to atmospheric pollution, especially the effect of acid rains, the removal or degradation of the woodland due to the uncontrolled development of tourist activities. A prolonged stressful situation can lead to the death of the wood, to the reduction of its specific composition (reduction of the number of its vegetal and animal species) or just to a decrease in the stability of the forest ecosystem. For many years, man has understood how important it is to have a suitable amount of healthy forests on Earth. This is why many local and international organisations have been set up to investigate the problem of deforestation and to propose techniques for the “sustainable” exploitation of forests, and have often directly undertaken to protect and treat the existing woods or to reconstruct those that have gone lost.

## Preserving forests

The awareness of the importance of protecting the flora, the numerous and complex plant world, has grown over the last century. In particular, man has understood that vegetal biodiversity (i.e. the differences existing among the many vegetal species) is probably one of the greatest resources that mankind has been given by nature. So far, the scientists have classed over 250 thousand species of moss, ferns, conifers and blooming plants. But they believe there are over 50 thousand more species that have not been documented yet, especially in distant and almost unexplored Tropical forests. Over the last century, specialised hybridisers and the large seed companies have been using this rich genetic heritage to create in a natural way, by suitably “cross-breeding” different plants, new high-yield varieties that have made modern farming much more productive. Many of the wild and ornamental species existing in nature are now preserved and protected in the 1,600 botanical gardens of the world. In addition, genetic banks for plants have been established and now preserve over 6 million samples of seed.

One day, these stocks of materials could come handy to produce new plant varieties that could be useful to man or to the environment. Botanical gardens and seed banks are indispensable conservation facilities, but they preserve, however, only a small portion of plant biodiversity compared to that that exists in nature. Vegetal biodiversity can actually be preserved with absolute certainty only by protecting the indigenous environments and ecosystems where the plants have evolved.