**Land resources:**

Land as a resource: Landforms such as hills, valleys, plains, river basins and wetlands include different resource generating areas that the people living in them depend on. Many traditional farming societies had ways of preserving areas from which they used resources. Eg. In the ‘sacred groves’ of the Western Ghats, requests to the spirit of the Grove for permission to cut a tree, or extract a resource, were accompanied by simple rituals. The outcome of a chance fall on one side or the other of a stone balanced on a rock gave or withheld permission. The request could not be repeated for a specified period.

If land is utilized carefully it can be considered a renewable resource.

The roots of trees and grasses bind the soil. If forests are depleted, or grasslands overgrazed, the land becomes unproductive and wasteland is formed. Intensive irrigation leads to water logging and salination, on which crops cannot grow. Land is also converted into a non-renewable resource when highly toxic industrial and nuclear wastes are dumped on it.

Land on earth is as finite as any of our other natural resources. While mankind has learnt to adapt his lifestyle to various ecosystems world over, he cannot live comfortably for instance on polar ice caps, on under the sea, or in space in the foreseeable future.

Man needs land for building homes, cultivating food, maintaining pastures for domestic animals, developing industries to provide goods, and supporting the industry by creating towns and cities. Equally importantly, man needs to protect wilderness area in forests, grasslands, wetlands, mountains, coasts, etc. to protect our vitally valuable biodiversity.

Thus a rational use of land needs careful planning. One can develop most of these different types of land uses almost anywhere, but Protected Areas (National Park’s and Wildlife Sanctuaries) can only be situated where some of the natural ecosystems are still undisturbed. These Protected Areas are important aspects of good landuse planning.

Land Degradation: Farmland is under threat due to more and more intense utilisation. Every year, between 5 to 7 million hectares of land worldwide is added to the existing degraded farmland. When soil is used more intensively by farming, it is eroded more rapidly by wind and rain. Over irrigating farmland leads to salinisation, as evaporation of water brings the salts to the surface of the soil on which crops cannot grow. Over irrigation also creates water logging of the topsoil so that crop roots are affected and the crop deteriorates. The use of more and more chemical fertilizers poisons the soil so that eventually the land becomes unproductive.

As urban centers grow and industrial expansion occurs, the agricultural land and forests shrink. This is a serious loss and has long term ill effects on human civilisation.

Soil erosion: The characteristics of natural ecosystems such as forests and grasslands depend on the type of soil. Soils of various types support a wide variety of crops. The misuse of an ecosystem leads to loss of valuable soil through erosion by the monsoon rains and, to a smaller extent, by wind. The roots of the trees in the forest hold the soil. Deforestation thus leads to rapid soil erosion. Soil is washed into streams and is transported into rivers and finally lost to the sea. The process is more evident in areas where deforestation has led to erosion on steep hill slopes as in the Himalayas and in the Western Ghats. These areas are called ‘ecologically sensitive areas’ or ESAs. To prevent the loss of millions of tons of valuable soil every year, it is essential to preserve what remains of our natural forest cover. It is equally important to reforest denuded areas. The linkage between the existence of forests and the presence of soil is greater than the forest’s physical soil binding function alone. The soil is enriched by the leaflitter of the forest. This detritus is broken down by soil micro-organisms, fungi, worms and insects, which help to recycle nutrients in the system. Further losses of our soil wealth will impoverish our country and reduce its capacity to grow enough food in future.

CASE STUDY

Selenium – Punjab

In 1981-82, farmers from Hoshirapur and Nawanshehar Districts approached scientists of the Punjab Agricultural University (PAU), Ludhiana, as wheat crops had turned white. Soil analysis indicated selenium (Se) levels in the area were above toxic limits. Se is a naturally occurring trace element, essential for animal and human health, but the gap between requirement and excess is narrow. Soils containing 0.5 microgrammes (ug) of Se per kg or more are injurious to health. In some areas of Punjab, Se levels ranges from 0.31 ug/kg to 4.55ug/kg. Rice cultivation requires the presence of standing water. Being highly soluble, Se dissolves and comes to the surface. The water then evaporates leaving the Se behind.

**ROLE OF AN INDIVIDUAL IN CONSERVATION OF NATURAL RESOURCES**

Until fairly recently mankind acted as if he could go on for ever exploiting the ecosystems and natural resources such as soil, water, forests and grasslands on the Earth’s surface and extracting minerals and fossil fuels from underground. But, in the last few decades, it has become increasingly evident that the global ecosystem has the capacity to sustain only a limited level of utilization. Biological systems cannot go on replenishing resources if they are overused or misused. At a critical point, increasing pressure destabilizes their natural balance. Even biological resources traditionally classified as ‘renewable’ - such as those from our oceans, forests, grasslands and wetlands, are being degraded by overuse and may be permanently destroyed. And no natural resource is limitless. ‘Non-renewable’ resources will be rapidly exhausted if we continue to use them as intensively as at present.

The two most damaging factors leading to the current rapid depletion of all forms of natural resources are increasing ‘consumerism’ on the part of the affluent sections of society, and rapid population growth. Both factors are the results of choices we make as individuals. As individuals we need to decide;

• What will we leave to our children? (Are we thinking of short-term or long-term gain?)

• Is my material gain someone else’s loss?

Greed for material goods has become a way of life for a majority of people in the developed world. Population growth and the resulting shortage of resources most severely affects people in the developing countries. In nations such as ours, which are both developing rapidly, and suffering from a population explosion, both factors are responsible for environmental degradation. We must ask ourselves if we have perhaps reached a critical flash point, at which economic ‘development’ affects the lives of people more adversely than the benefits it provides.

What can you do to save electricity?

• Turn off lights and fans as soon as you leave the room.

• Use tube lights and energy efficient bulbs that save energy rather than bulbs. A 40watt tube light gives as much light as a 100 watt bulb.

• Keep the bulbs and tubes clean. Dust on tubes and bulbs decreases lighting levels by 20 to 30 percent.

• Switch off the television or radio as soon as the program of interest is over.

• A pressure cooker can save up to 75 percent of energy required for cooking. It is also faster.

• Keeping the vessel covered with a lid during cooking, helps to cook faster, thus saving energy.

EQUITABLE USE OF RESOURCES FOR SUSTAINABLE LIFESTYLES

Reduction of the unsustainable and unequal use of resources, and control of our population growth are essential for the survival of our nation and indeed of human kind everywhere. Our environment provides us with a variety of goods and services necessary for our day-to-day lives, but the soil, water, climate and solar energy which form the ‘abiotic’ support that we derive from nature, are in themselves not distributed evenly throughout the world or within countries. A new economic order at the global and at national levels must be based on the ability to distribute benefits of natural resources by sharing them more equally among the countries as well as among communities within countries such as our own. It is at the local level where people subsist by the sale of locally collected resources, that the disparity is greatest. ‘Development’ has not reached them and they are often unjustly accused of ‘exploiting’ natural resources. They must be adequately compensated for the removal of the sources to distant regions and thus develop a greater stake in protecting natural resources.

There are several principles that each of us can adopt to bring about sustainable lifestyles. This primarily comes from caring for our Mother Earth in all respects. A love and respect for Nature is the greatest sentiment that helps bring about a feeling for looking at how we use natural resources in a new and sensitive way. Think of the beauty of a wilderness, a natural forest in all its magnificence, the expanse of a green grassland, the clean water of a lake that supports so much life, the crystal clear water of a hill stream, or the magnificent power of the oceans, and we cannot help but support the conservation of nature’s wealth. If we respect this we cannot commit acts that will deplete our life supporting systems.