

Human Impact on the Environment

Ocean Explorer

Module **8**



Bayworld Centre for Research & Education





Overview

- 1 - Relationship between Resources and Economic development
- 2 - Exploitation & depletion of resources
- 3 - Availability and quality of water
- 4 - Poaching and Indigenous knowledge systems
- 5 - Sustainable use of the environment

1 - Relationship between Resources & Economic development

What is "Economic development" ?

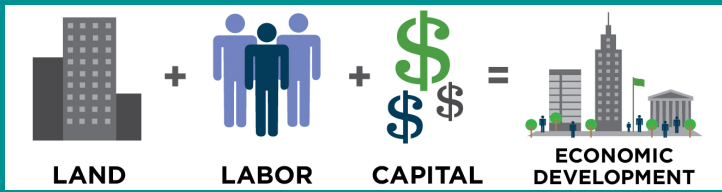
It is the development of economic wealth of countries, regions or communities for the well-being of their inhabitants. It is sometimes associated to the Economic growth, which refers to the increase (or growth) of a specific measure such as real national income, gross domestic product, or per capita income. But the Economic development of a country implies much more than the Economic growth. It typically refers to improvements in a variety of indicators such as literacy rates, life expectancy, and poverty rates. It is often used for countries, but can also apply to regions.

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Natural resources :
any type of materials or substances occurring in nature which can be exploited for economic gain. There are 2 types : renewables and non-renewables.

How does the Economic development affect the Natural Resources (and vice-versa) ?

Natural resources are limited. When these resources are depleted, the Economic development will stop. It then affects the living conditions and well-being of the populations that relied on these resources as a source of income. This also works the other way around : when a resource is being exploited more and more, it affects positively the Economic development, creating jobs and wealth. Most developing countries rely mainly on their resources to sustain them, and not on providing services or manufactured goods.



A simplified explanation of the link between the Natural Resources (Land) and the Economic Development

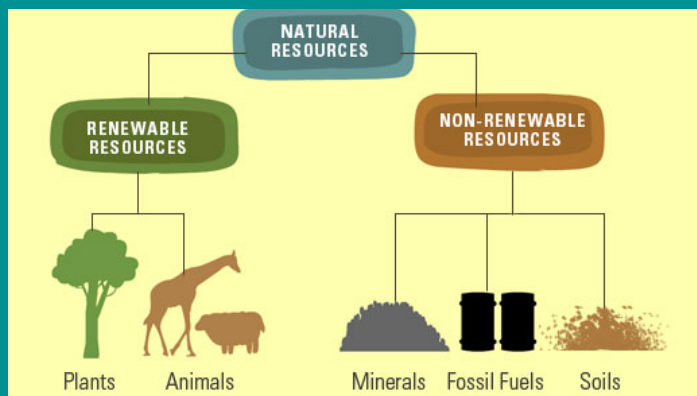


2 - Exploitation & Depletion of Resources

The sustenance and welfare of mankind depend upon the exploitation of different natural resources. The utilisation of soil, water minerals, coal, electricity, oil, gas and nuclear energy is very important for the development of a nation. These resources have changed the living conditions of populations.

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The exploitation of natural resources is the use of natural resources for economic growth, sometimes with a negative connotation of accompanying environmental degradation.



Renewable resources : can be re-created within a short span of time.

Ex : timber, paper, food crops...

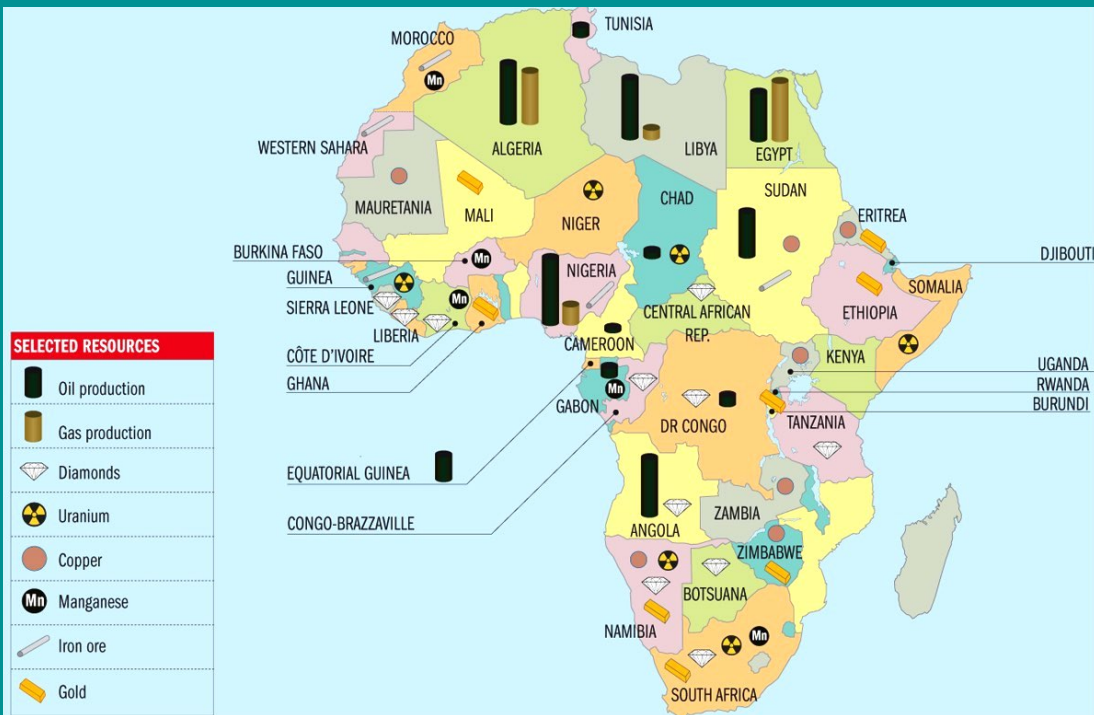
Non-renewable resources : cannot be re-created or only through a very long period of time.

Ex : metals, kerosene, petrol, natural gas, coal, minerals...

As populations increase, the depletion of natural resources will also increase. This will ultimately lead to the scarcity of these resources and threaten the very existence of life on Earth.

Even though renewable resources can be re-created, some will need more time than others to flourish again. Besides, if a category of living beings (a species for example) get completely eradicated, there will be no return to its former state as there is no way to come back from extinction !

Through the exploitation of natural resources, the human society has vastly modified the ecosystems in different parts of the world and has brought undesirable changes in the natural habitats. Consequently, some natural stocks of plants and animals have disappeared. About 1000 species are currently threatened with extinction or are dangerously rare. The human encroachment of nature has deprived the world civilisation of 130 mammal species and has endangered more than 250 species. Out of the total of approximately 0.3 million of plant species in the world, over 20,000 are in the category of either endangered or threatened with extinction.



Some of the natural resources of Africa. The African continent is rich in natural non-renewable resources and their sale on the international market helps feed the African populations.

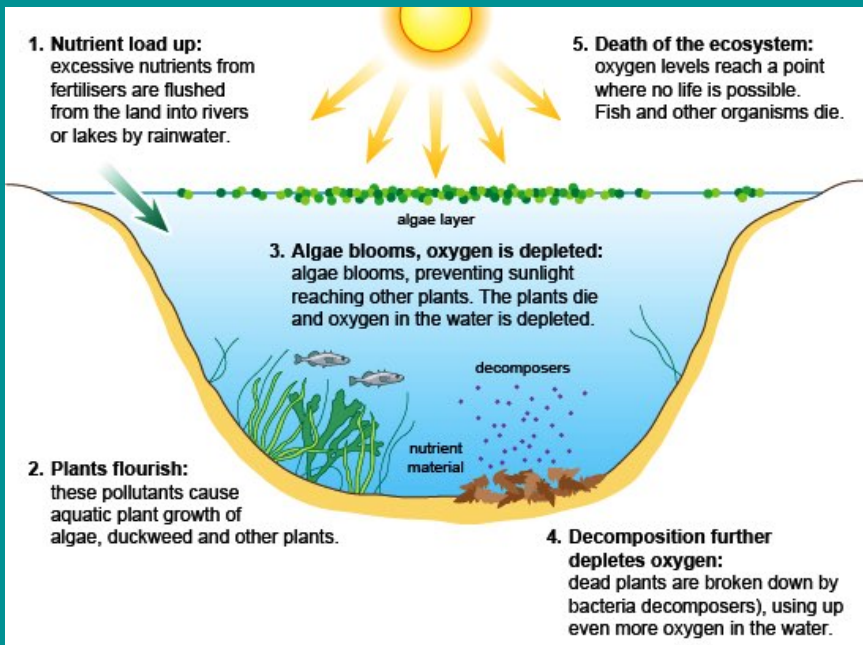


3 - Availability and quality of water

The quality of surface or ground water is a function of either both natural influences and human influences.

Without human influences, water quality would be determined by the weathering of bedrock minerals, by the atmospheric processes of evapotranspiration and the deposition of dust and salt by wind, by the natural leaching of organic matter and nutrients from soil, by runoff, and by biological processes within the aquatic environment that can alter the physical and chemical composition of water.

Eutrophication : the enrichment of a water body with nutrients, usually with an excess amount of nutrients. This process induces growth of plants and algae, and, due to the biomass load, will result in oxygen depletion of the water body.



Major nutrient sources include agricultural runoff, domestic sewage (also a source of microbial pollution), industrial effluents and atmospheric inputs from fossil fuel burning and bush fires.

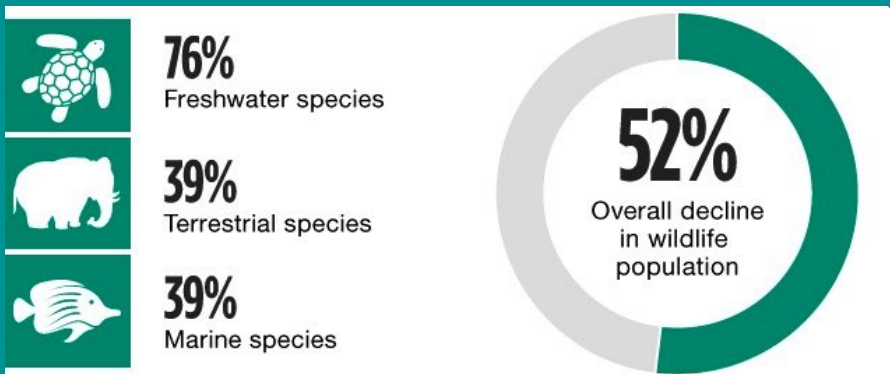
Globally, the most prevalent water quality problem is eutrophication, a result of high-nutrient loads (mainly phosphorus and nitrogen), which substantially impairs beneficial usage of water.

Why is water quality so important ?

Poor water quality has a direct impact on water quantity in a number of ways. Polluted water that cannot be used for drinking, bathing, industry or agriculture effectively reduces the amount of useable water within a given area.

Besides, water quality affects the environment and the species within. Like us, animals and plants need a good water quality to survive.

Wildlife population decline between 1970 and 2010



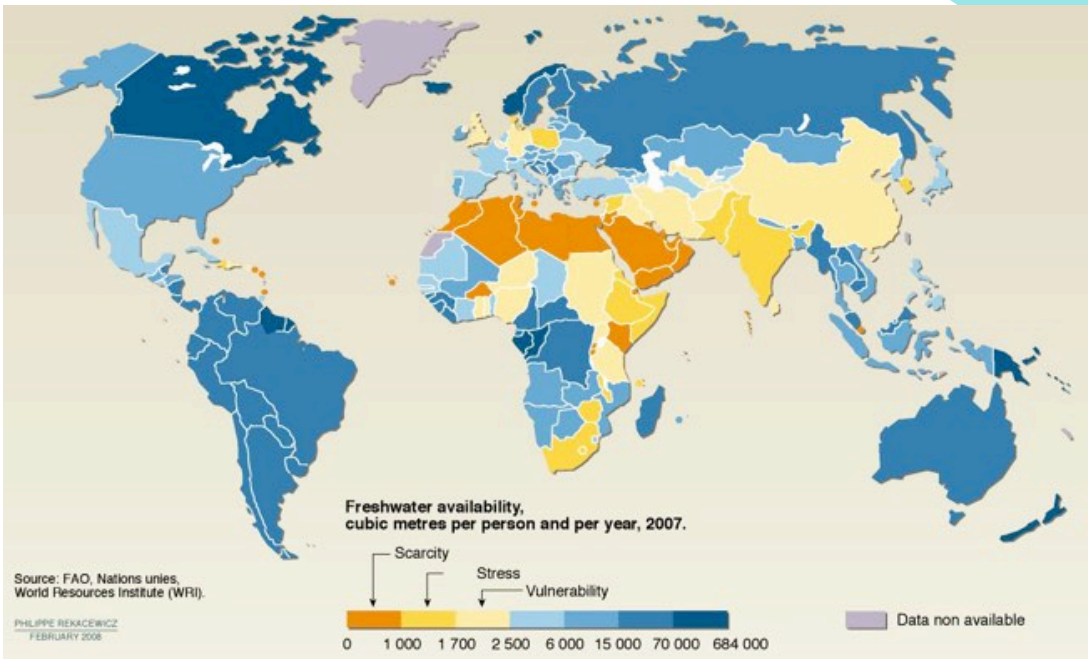
Water species have been more impacted than others because of their need for good quality freshwater. Most freshwater is now polluted, some more than other, and both species and humans have the greatest difficulties to survive in a poisoned environment.

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What is pollution ?

Pollution refers to chemicals or other substances in concentrations greater than would occur under natural conditions. Major water pollutants include microbes, nutrients, heavy metals, organic chemicals, oil and sediments; heat, which raises the temperature of the receiving water, can also be a pollutant. Pollutants are typically the cause of major water quality degradation around the world.

Freshwater availability in the world



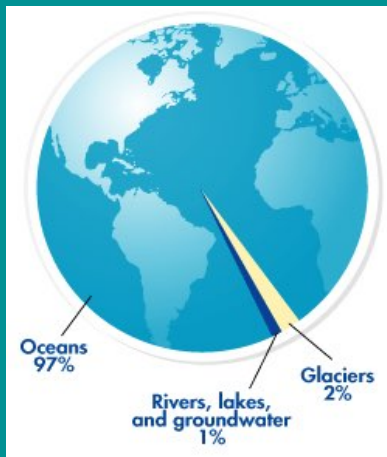
The availability of freshwater depends on the water ground resources but also the amount of pollution and the technicality of using these resources. Even if a country has water underground, it doesn't mean that its inhabitants will be able to make use of it !

Usable water in the world

Even if our planet is called "the blue planet", most of the water at the surface is salted water, and thus unusable.

Only 1% of the Earth's water is made out of freshwater, and only a tiny portion of it can actually be used as drinking water !

The rest of the freshwater is either inaccessible, not suitable for human consumption, stored in glaciers, used for something else or too polluted.





4 - Poaching and Indigenous knowledge systems

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Indigenous knowledge

is used to describe the knowledge systems developed by a community as opposed to the scientific knowledge that is generally referred to as 'modern' knowledge.

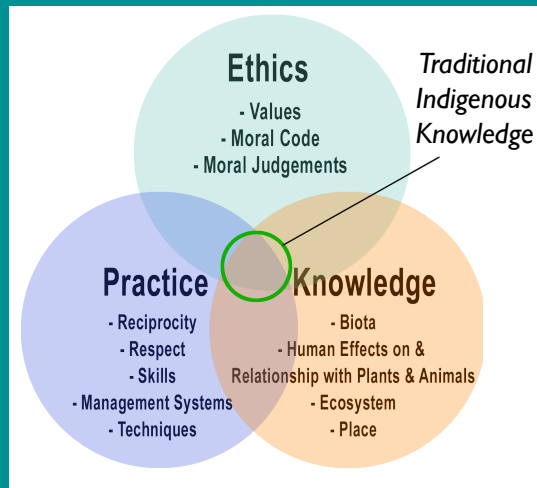
Indigenous knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world.

These traditional ways of life have proved highly durable. The key to this success is sustainability.

Indigenous people today use the resources available without depleting them. They use their intimate knowledge of plants, soils, animals, climate, and seasons, not to exploit nature but to co-exist alongside it. **This involves careful management, control of population, the use of small quantities but a wide diversity of plants and animals, small surpluses, and minimum wastage.** Plants provide food, medicines, pesticides, poisons, building materials; animals provide meat, clothes, string, implements, oil.

Surviving through Indigenous Knowledge

Indigenous knowledge has ensured the survival of many people in fragile habitats. It is a knowledge centered on the harmony of the natural world. All flora and fauna have a place in an ordered universe made up of humankind, nature, and spirits. Indigenous cultures also help to protect the natural world from destruction through religion and rituals. Animals are held in respect and their numbers maintained through careful management.



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Hunting, if done in a sustainable way i.e. by managing resources and not over-hunting, is a proper mean to regulate an animal population. However, when hunting becomes inconsiderate of the number of animals one can cull without impacting the wealth of the wild animal populations, it damages the ecosystem. Because of the previous, poaching is one of the most serious threats to the survival of wild

Poaching
is the illegal hunting
or capturing of wild
animals.

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Protected areas are designed to protect specific environments, encouraging the survival of the species living within the boundaries of the protected land.

plants and animals. It has a detrimental effect on biodiversity, enhancing the decline of wildlife. Species are depleted in poaching areas, and the ecosystem is disturbed.



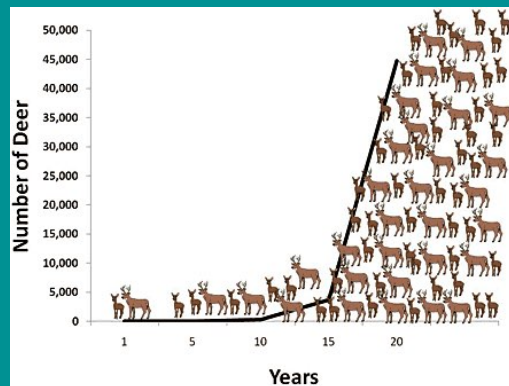
Regulate a wild population by hunting

Because wildlife is a renewable resource, hunters can help control wildlife populations by taking the surplus away, keeping the populations at a healthy balance for the habitat. Regulated hunting has never led to threatened or endangered wildlife populations. Hunting is an effective wildlife management tool. Hunters play an important role by also providing information from the field that wildlife managers need.

This graph is a representation of what would happen to a deer population if no control was done by hunters.

Overpopulation of one type of species is dangerous for the environment, in this case it will lead to :

- habitat destruction by overgrazing
- more diseases spreading (i.e. lyme disease)
- car crashes due to more road crossing
- property damage by the growing population
- agricultural damage



Bush meat crisis

Long time ago, people used to hunt wild animals like antelopes, zebras, and hippopotamus to feed their families on a sustainable basis. They had specific hunting seasons that took the animals breeding seasons into consideration. This ensured that the numbers of animals were not affected.

However, this is not the case today as the commercial value of bush meat has forced people to hunt throughout the year. Due to the commercial value of bush meat, it is no longer viable for people to hunt for domestic consumption. As the human population increases, demand for bush meat also increases, thus depleting their numbers. By hunting and killing animals, we lose their contribution to seed dispersal and forest regeneration, animals being responsible for 80% of the rejuvenation of forests.

With the increase of deforestation for logging and palm oil plantations, communities are allowed free reign in the forests where trucks are using the newly developed roads and poachers with firearms are taking out millions of pounds of Bush Meat annually.

Bush meat refers to wild or game meat. In Africa, the forest and shrub land is commonly called a bush. Since wild animals live in the bush, people refer to this kind of meat as bush meat. The meat includes threatened and endangered animals and among others the most sought after species being chimpanzees and other primates, antelopes, bush buck, kob, hippopotamus, buffalo and warthog.

Consequences of Bush Meat Crisis

- The current hunting methods such as wire snare, man traps or automatic rifles are very cruel and indiscriminately kill animals.
- When a wire snare enters the flesh and breaks the animal's tendons, the wound cannot heal.
- Many animal species are becoming endangered or even extinct because of the Bush Meat crisis.
- The loss of biodiversity is irreversible.
- Bush Meat trade is directly responsible for starvation and loss of culture among the local populations.



5 - Sustainable use of the environment

What is Sustainability ?

Sustainability is the action to protect our natural environment, human and ecological health, while driving innovation and not compromising our way of life.

We consume a lot of natural resources every day, especially in cities to keep our streets and civic buildings lit, to power our appliances, our heating and other public and household power requirements.

Sustainability and sustainable development focuses on balancing that fine line between competing needs - our need to move forward technologically and economically, and the needs to protect the environments in which we and others live. Sustainability is not just about the environment, it's also about our health as a society in ensuring that nobody suffers as a result of environmental legislation, and it's also about examining the longer term effects of the actions humanity takes and asking questions about how it may be improved.

Goals of a sustainable lifestyle

- The end of poverty and hunger
- Better standards of education and healthcare - particularly as it pertains to water quality and better sanitation
- Achieve gender equality
- Sustainable economic growth while promoting jobs and stronger economies
- Tackling the effects of climate changes, pollution and other environmental dangers
- Health of the land, air and sea and ecosystems in general

The sustainable exploitation of a renewable resource : wood

Forests are the 'lungs' of the earth, without them life as we know it will cease to exist. Wood has been utilised by men ever since the beginning of agriculture. Nowadays it is used in various sectors such as construction, furniture production, packaging, transport, etc. It is a renewable resource, which makes it easy to replace when the need arises.

In order to produce enough wood for the world growing needs but also to keep natural areas untouched, the wood industry has found a solution : growing artificial forests and using these for the wood instead of cutting down natural forest areas.

By doing so, the old natural forests have been protected and house incredible life forms.

Management and exploitation of an artificial forest



1 - Young trees are planted.

2 - The planting grounds are cleared from other trees / plants.

3 - The smallest trees or the trees that are not growing properly are removed to make space for the bigger ones.

4 - The trees are ready for felling.

5 - The wood is processed into buildings, furniture or other objets.

6 - After having been recycled and used again, the wood gets too damaged to be repaired. These wood pieces will be used as fuel by burning.



6 - Activity : Poaching and extinction

Questions

Look at the infographic below and discuss the following questions. This can be done through a debate.

- 1 - Why are these animals killed ?
- 2 - Do you think the hunting of these species is part of a sustainable plan ?
- 3 - Find other uses for these animals than the ones depicted below.
- 4 - Is medicine made out of rhino horns or other animal parts effective ?

Explain.

- 5 - What will happen if these animals disappear ? What will be the consequences for the ecosystem they used to live in ?



Why are these animals killed?



Endangered animals are slaughtered so that a single body part – like tusks, pelt, or bones – can be illegally sold for huge sums of money.



RHINO HORN
is believed to treat:



Hangovers



Impotence



Fever



Cancer

PROVEN TO CURE: NONE OF THE ABOVE



The demand for rhino horn is exceedingly high; it sells for nearly **\$30,000 a pound**. Gold, by comparison, is worth about \$22,000 a pound.



IVORY
is carved into:



Jewelry



Utensils



Religious Figurines



Trinkets

WORTH THE LIFE OF AN ELEPHANT? NO.



As much as 70% of illegal ivory goes to China, where it is sold on the streets for up to **\$1,000 a pound**.



Zebras are hunted for their skins. They are also occasionally used for meat or medicine.



Wildlife officials have observed a recent surge in trafficking of infant gorillas. They are sold for up to \$40,000.



Due to recent habitat loss, many lions live close to humans and are killed by farmers in retaliation for preying on livestock.



VULNERABLE

ENDANGERED

CRITICALLY ENDANGERED

At current poaching rates, elephants, rhinos, and other iconic African wildlife may be **gone within our lifetime.**