

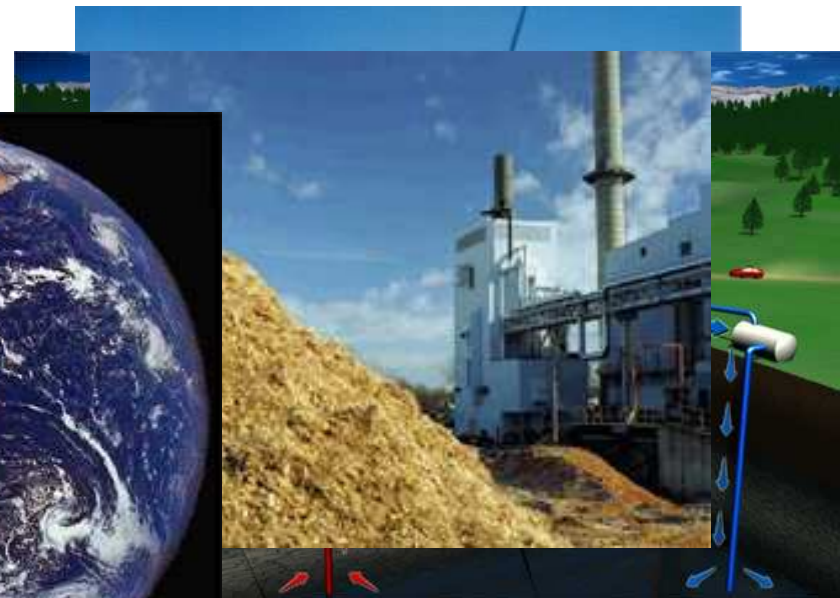
A photograph of a vast wind farm. Numerous white, three-bladed wind turbines are scattered across a rolling, grassy landscape. The sky is a clear, bright blue. The turbines are of varying heights and are positioned at regular intervals across the terrain. The overall scene conveys a sense of clean, renewable energy production in a natural setting.

Natural Resources for Sustainable Development

Introduction

You will know:

- what are alternative energies
- if our country has good conditions for the use of alternative energies
- what is the Crest of Earth
- what is the Ecological Footprint



Geothermal energy

There are two types of geothermal energy:

- Low-temperature $< 150^{\circ}\text{C}$

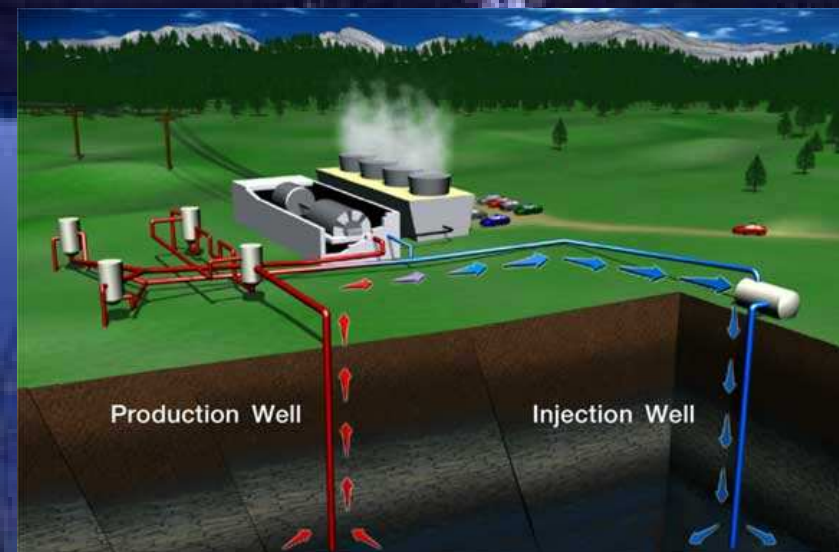
Uses:

- thermal spas
- therapeutic uses
- agriculture
- fish farming

- High-temperature $> 150^{\circ}\text{C}$

Uses:

- produce electricity
- thermal use



HYDROELECTRIC ENERGY

Tidal Energy

The tides are the result of the combination of forces generated by the attraction of the sun and the moon and the rotation of the Earth that leads to the rise and fall of water of the oceans and seas. The tidal energy is to exploit the gaps that result from water that rise and fall of tides.

Wave Energy

The ocean waves have kinetic energy due to the movement of water and potential energy due to their height. The electrical energy can be obtained if used the oscillating motion of the waves.



Wind energy

The aero motors or wind turbines that turn wind energy into electricity.

These wind turbines and are located in open areas with an annual average of high wind speed

Wind Energy installed in 2007

Country	Germany	<u>EUA</u>	Spain	<u>India</u>	<u>China</u>	Denmark	Italy	France	<u>United Kingdom</u>	<u>Portugal</u>	Other Countries
MW	22.247	16.818	15.145	8.000	6.050	3.125	2.726	2.454	2.389	2.150	13.019
%	23,6	17,9	16,1	8,5	6,4	3,3	2,9	2,6	2,5	2,3	13,8

Solar Energy



In the photovoltaic system, solar panels use cells that capture solar energy and convert it directly into electricity

This system is applicable in areas with large periods of sunshine like in Portugal. Our country, due to the climate conditions, has excellent conditions for the photovoltaic conversion

There is another type of energy that uses the solar energy to warm the water

We do not use this thermal collectors very often because of the large initial investment and the lack of knowledge by the public.



Biomass Energy

In the energy context, the term biomass refers to biological material derived from living organisms that can be converted into energy.



The biomass energy is by far the largest renewable energy source worldwide.

As for the generation of electricity, biomass is the second renewable energy source most used, following the water.

There are many problems that stem from the traditional use of biomass as the collection of wood without the subsequent reforestation causes flooding, erosion and loss of soil nutrients.

Crest of Heart

The United Nations Conference on Environment and Development

Objective: (3 to June 14 1992)

**Save the Earth from the dangers
caused by industrial and
economical development**

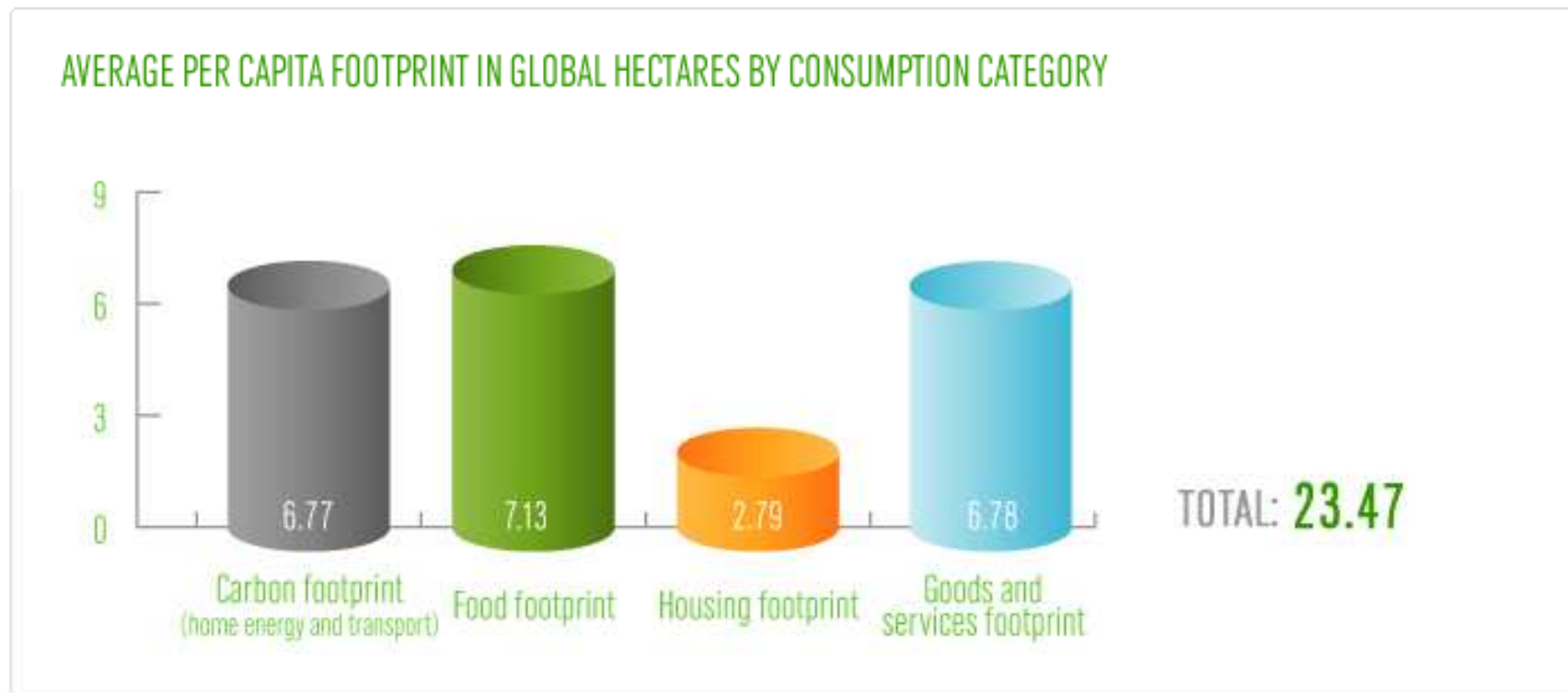
Result:

27 principles

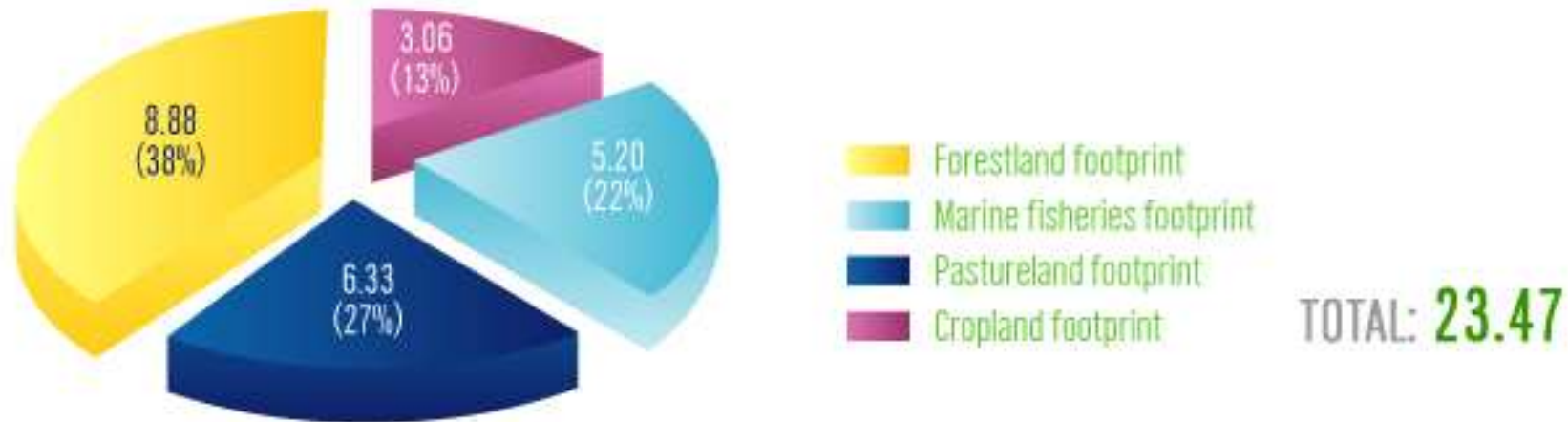


Ecological Footprint

The Ecological Footprint Quiz estimates the area of land and ocean required to support your consumption of food, goods, services, housing, and energy and assimilate your wastes



AVERAGE PER CAPITA FOOTPRINT IN GLOBAL HECTARES BY BIOME



We are overshooting the Earth's biological capacity by nearly 50%. To sustain present levels of consumption, we would need:

A visual equation consisting of two green globe icons, a plus sign, a second green globe icon, an equals sign, and the text "1.50 EARTHS!".

$$1 \text{ Earth} + 0.5 \text{ Earth} = 1.50 \text{ EARTHS!}$$

There are many simple ways to reduce the footprint you leave on the planet.

How to reduce your Housing Footprint:

- **Use cleaner transport**
- **Add energy-saving features to your home**
- **Adopt energy-saving habits**

How to reduce your Food Footprint:

- **Eat more local, organic, in-season foods.**
- **Choose foods with less packaging to reduce waste**



Conclusion



Use alternative energies
Save the planet



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