**Unit 5. The hydrosphere.**

INTRODUCTION

<https://www.youtube.com/watch?v=0q0ApYZrMTk>

The presence of liquid water on theEarth’s surfacemakes our planet unique in the Solar System.

Overpopulation in the world results in water pollution.

CONCEPT

The hydrosphere is the combined mass of all the water on the planet: seas, oceans, surface water on the continents, groundwater and glacial ice.

Water covers about three quarters of the planet’s surface.



1. **Water cycle**: Relate with the changes of water’s state



The water we use comes from groundwater layer or aquifers, lakes and rivers.

What are the goundwater layers or aquifers?

Tell your partner

Natural disaster could happen:

Floods

Droughts

What happens when rivers overflow?

What happens after a long absence of rain?

Tell your partner

**2. Water is necessary for life**:
ALL THE LIVING THINS CONSIST MAINLY OF WATER: Write the percentage:

\_\_\_\_% human beings

\_\_\_\_% marine animals

\_\_\_\_% woody plants

Read “the properties of water”

Relate the properties of the water with its functions. Youhave to copy

* Water exists in three states allowing the water cycle to occur. It can be absorbed as liquid and returns to the air as vapour.
* It is highly solvent, so:
	+ Many biochemical reaction occur in a watery environment or can be taken in processes like photosynthesis.
	+ Dissolves and carries essential substances for feeding cells and helps to eliminate waste substances (in urine or sweat)
* Ice can float on liquid water because it is not as dense, so many living things can develop under ice.
* Water can absorb a lot of heat but its temperature only rises slightly, so water keeps our internal temperature constant.
* Water molecules bond tightly together enabling insects to “walk” on it.

3. Water is a precious resource.

* How water is used? Discuss about them without book. After that read them: pag 100
	+ Agriculture
	+ Public
	+ Domestic
	+ Recreational
	+ Livestok
	+ Industrial
	+ Transport
	+ To generate electricity,

What are the reservoirs?

It is an artificial lake, a place where water is kept, after building a barrier o dam across a water way such a river.

What are their uses?

Their uses are for human consumption, watering and to produce electricity.

* As the availability of water is limited, it is essential avoid wasting it, prevent its pollution and encourage water recycling:

3.1 Ways to save water. Watch

<https://www.youtube.com/watch?v=9NSE-mii9PA>

<https://www.edenproject.com/learn/for-everyone/water-saving-tips>

Discuss about it and then read. Pag 101.

<https://www.youtube.com/watch?v=As_hxqf7sRY>

3.2 Water can be polluted by:

* Sewage, waste water, water from human houses, farming or other buildings. It contains s lot pathogenic microorganisms.
* Chemical products (solvents, heavy metals, detergents…) from houses, industries and farmings.
* Solid objects: tins, plastics.
* Unused medicines
* Energy sources as the hot water used as cooler agent in nuclear plants.

Pollution can occur at a specific site (urban and industrial waste) or can be diffuse without a clear source (agricultural waste).

In some places (developing countries) waste water is thrown into rivers lakes and seas.

Read marine pollution and discuss about the amount of toxic substances, plastics and oil slicks from crude oil spills during its extraction or transportation. They can kill marine life.

Fill the gaps with these words:

Springs, **SOURCES,** Desalination Plant, **Water collection**, Reservoirs, **Water purification,** Fountains, **Distribution** networks, uses, Wells, **sewerage system,** sewage, Rivers, **Waste water treatment, irrigation,** Lakes

3.3 **The urban water cycle**.

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A \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ takes the waste water (\_\_\_\_\_\_\_) to the treatment plant

Chemical treatment

Storage in tanks

\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ (pipes) to supply purified water for urban \_\_\_\_\_\_\_

Sea

Some of the treated water is reused for \_\_\_\_\_\_\_\_ and for cooling systems

Waste such as solids, sand, fat and organic matter

Fill the gaps with these words:

Springs, **SOURCES,** Desalination Plant, **Water collection**, Reservoirs, **Water purification,** Fountains, **Distribution** networks, uses, Wells, **sewerage system,** sewage, Rivers, **Waste water treatment, irrigation,** Lakes

3.3 **The urban water cycle**.

**SOURCES**

Rivers

Lakes

Fountains

Springs

Wells

Reservoirs

A sewerage system takes the waste water (sewage) to the treatment plant

Chemical treatment

Storage in tanks

**Distribution networks** (pipes) to supply purified water for urban **uses**

Desalination plant

Sea

Some of the treated water is reused for **irrigation** and for cooling systems

Waste such as solids, sand, fat and organic matter

