

# Water – Course 1

## MOOC

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*WATER SCARCITY: A MORAL ISSUE?*





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## INTRODUCTION

There is no life without water.

Although water occupies 70% of the Earth's surface is by, only 1% of all water on Earth is available for human consumption.

The distribution of fresh water on Earth is extremely uneven, so in many areas there is not enough fresh water, not even for the most basic needs of the inhabitants.

The hydrological cycle is responsible for the constant amounts of water on Earth, but human activities greatly affect water reserves, water movement processes, and the quality of available water in nature.

A responsible attitude towards entire population of the Earth and towards water is a pre-condition for sustainable development.

## 1. Lesson 1 The origin of water and the circulation of water in nature

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### WHY IS WATER SO PRECIOUS?

There's no life without water, it is a prerequisite for natural processes and for most human activities.

#### How much water is there on Earth?

- 70% of the Earth's surface is covered by water

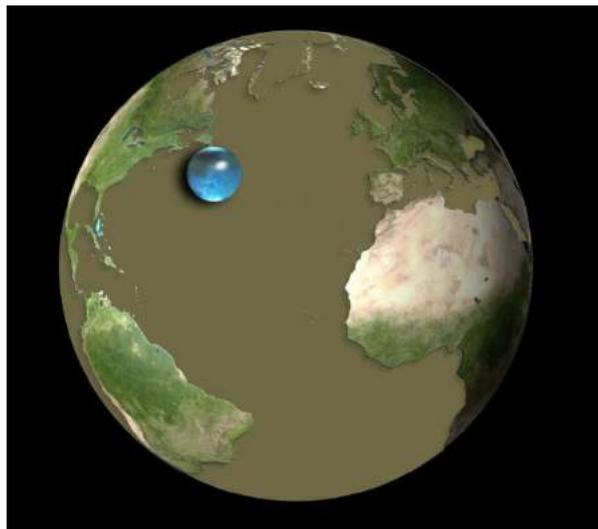


photo: [www.astronomija.org.rs](http://www.astronomija.org.rs)



- 96.5% of the total water is sea water



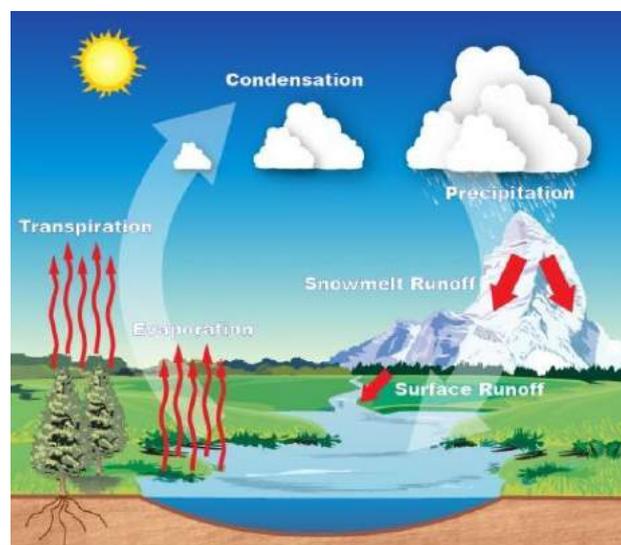
Photo: Hrvatski fotosavez

- 1% is salty (brackish) water
- 2.5% water is available for use
- Of which 69.5% of water is frozen in glaciers and in the ground, and 29% in the underground

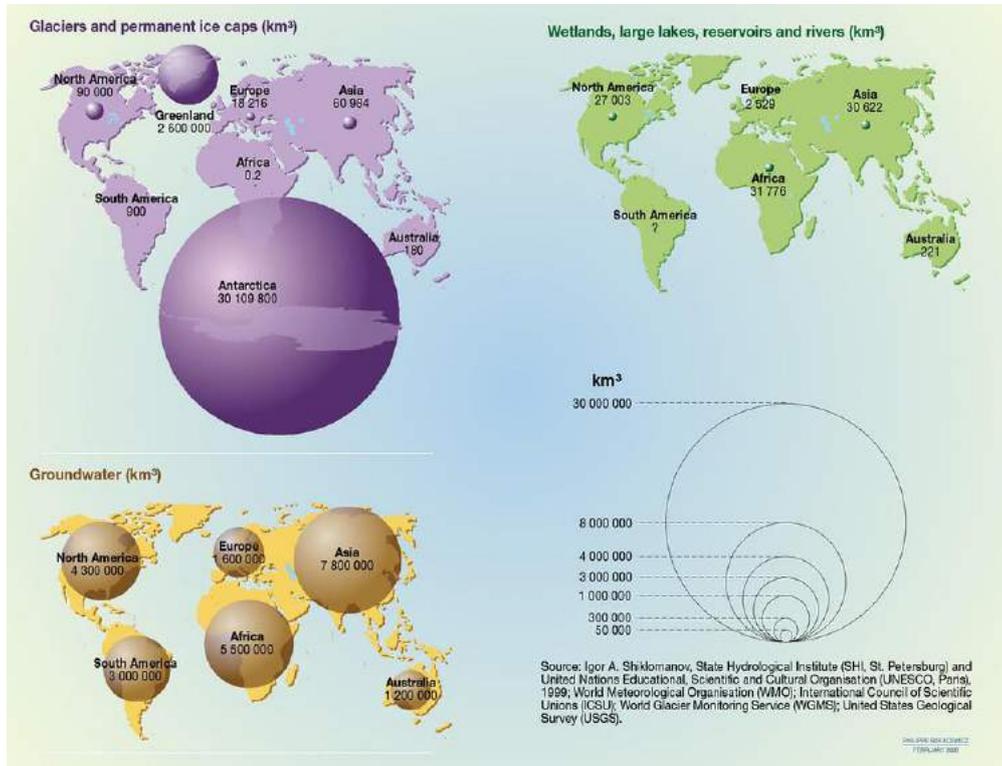
Only 1% of fresh water on Earth (0.007% of total water) is available for human consumption.

### *WHERE DOES THE DRINKING WATER COME FROM?*

The hydrological cycle (circulation of water in nature) makes the amount of water on Earth constant and allows life to be maintained. Although the amount of water on Earth does not change, human activities greatly affect water reserves, water movement processes and the quality of available water in nature.



The distribution of fresh water on Earth is extremely uneven, so in a world with just over 6 billion inhabitants, many areas do not have fresh water for even the most basic needs.



### HOW IS WATER AVAILABLE AMONG CONTINENTS?

Availability of water on continents (UNESCO):

CONTINENT	The amount of world water resources available	Percentage of world population
Europe	8%	13%
Asia	36%	60%
Africa	11%	13%
North America	15%	8%
South America	26%	6%
Australia and Oceania	5%	1%



## 2. Lesson 2 The uses of water

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### *WHY DO WE HAVE TO WORRY ABOUT THE AMOUNT OF WATER AVAILABLE?*

The amount of drinking water available on Earth is constantly the same, but the number of inhabitants on Earth is constantly increasing. Exploitation of drinking water further increases due to the changed living conditions and growth of socio-economic needs.

Today, 40% of people on Earth live in conditions of water scarcity. The underdeveloped countries (mostly in Africa and the Middle East) with a large increase in population, are poor in water. According to UN forecasts, by 2025 more than 2/3 of the world's population (about 5.5 billion) will live in countries with water shortages.



photo: <https://www.dw.com/hr/potrošeni-prirodni-resursi-zemlje-za-ovu-godinu/a-49788139>

We need to change our attitude towards water, as well as our behavior. Pollution and contamination of water supplies endangers life on Earth and impedes development. According to the World Health Organization (WHO), in 2000, 1.1 billion people lived without access to healthy drinking water (15 min walk to the source). More than 5 million people a year, including 2 million children, die from diseases caused by unsatisfactory drinking water supplies (UN data).



## WATER EXPLOITATION IN EUROPE



photo: Hrvatski fotosavez

Approximately 80% of fresh water in Europe comes from rivers and groundwater. These sources are at risk from overexploitation, pollution and climate change. For example, in the summer of 2015, there were 20% fewer renewable freshwater sources than in the same period in 2014, as net precipitations decreased by 10%.

The total amount of water consumed annually in Europe is distributed approximately as follows:

- Agriculture - 40%



photo: <http://www.glas-slavonije.hr/358262/7/Za-natapanje-polja-1145-milijuna-kuna-u-tri-godine>

- Energy production - 28%



photo: <http://www.energetika-net.com/specijali/nove-tehnologije/iz-centra-proizvodnje-dalmacije-upravljase-svim-dalmatinskim-hidroelektranama-18054>

- Industry - 18%



photos: <https://www.grundfos.com/hr/learn/research-and-insights/treating-and-using-our-water-more-wisely>



- Households - 12%.



<https://www.enu.hr/gradani/info-edu/usteda-vode/>

### *EFFECTS OF WATER OVEREXPLOITATION ON THE ENVIRONMENT*

Water usage contributes to economic growth and the quality of life of the population. However, overexploitation of water resources, for human and economic needs, happens to the detriment of the entire environment.



photo: Hrvatski fotosavez



Most wastewater, after being used in industry, households or agriculture, is polluted due to the discharge of chemicals, sewage waste or nutrients and pesticides from agricultural land. Such water directly endangers all life in the environment.

Due to an increased temperature of the water used for energy production, it can distort the natural flow of water and endanger the life cycle in rivers and lakes.

More efficient water uses and management in Europe since 1990 has improved the situation. The usage of water supplies decreased by a total of 19%.

**A responsible attitude towards water is a condition for sustainable development. It is the duty of each individual to engage in responsible water management.**

### 3. Lesson 3 Water consumption: reasonable or not

#### *DOES "OUR" WATER BELONG TO US?*

Almost all the water on Earth has gone through a hydrological cycle countless time. And for thousands of years people have been interfering with the natural flow of water, using dams and embankments to change watercourses, pumping groundwater... thus disturbing the natural balance and endangering the survival of the living world in water.



photo: Hrvatski fotosavez

Water does not respect boundaries. It is considered a "runaway treasure".

Each of us is touched by „someone else's water, which started its journey somewhere else, and we all send "our" water to someone else. "Our" water does not belong only to us. We are all part of a hydrological cycle. And we all



live downstream from someone else! Water must be used rationally and responsibly even by those who have it in abundance



photo: Hrvatski fotosavez

## *SUSTAINABLE WATER EXPLOITATION*

We can carelessly consume only that water whose supplies are evenly replenished in the hydrological cycle. If more is consumed than it is replenished by rain, the springs will dry up over a period of time.

Integral, sustainable and responsible water resources management include:

- a) reduced and rational consumption
- b) wastewater treatment
- c) reuse of purified water in industry and agriculture.

The attitude towards water reflects the degree of social and environmental awareness in different countries. In developed countries, industries are required by law to collect and purify water from their own plants.

Rational water consumption enables a fair water supply and an acceptable price. This is especially significant for the poorest parts of society.

Integrated water management also includes caring for the environment, which gets its share of much-needed water through a fair supply.

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