

## 3.5 Water and climate change

Graduate Manager in the medicine *Aleksandra Stojanovska*, Biosfera

### Short description on the theme

Climate change is already happening and represents one of the greatest environmental, social and economic threats facing the planet. The European Union is committed to working constructively for a global agreement to control climate change, and is leading the way by taking ambitious action of its own.

The warming of the climate system is unequivocal, as is now evident from observations of increases in average global air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level. The earth's average surface temperature has risen by 0.76° C since 1850. Most of the warming that has occurred over the last 50 years is very likely to have been caused by human activities.

Freshwater resources are highly sensitive to variations in weather and climate. The changes in global climate that are occurring as a result of the accumulation of greenhouse gases in the atmosphere will affect patterns of freshwater availability and will alter the frequencies of floods and droughts.

### Goals of this unit

- to discuss the importance of water in nature through looking at the water cycle
- to discuss climate changes and water issues

### Objectives

- to gain knowledge about the relationships between climate change and water in nature
- to learn about the impacts of climate change on life-forms
- learn about basic terms: evaporation, condensation, precipitation and collection.

### Basic conditions

Target group ..... children and youth aged 10 – 14 and their parents

Place ..... a class room in nature

Materials needed..... photos, sheets with tables to be filled in with answers to questions, pens, several glasses of drinking water

Method ..... Open discussion

Time frame ..... 45 minutes

### Explanation

(5 minutes): Explain to the group the goals and objectives of the exercise

1

Education partner and target group, content and goal

2

Abstract of the examined themes and target group

3

Eight Concepts on water issues

3.1

Experience of water by working at learning stations

3.2

Water in our everyday life

3.3

Research on waterbodies, organisms and water quality

3.4

Water Art on paper

3.5

Water and climate change

3.6

Water and history

3.7

Water and energy

3.8

Water games

4

Attachment

(15 minutes): How old is the water? Ask several of the participants to drink water from their glasses. Ask them: Can they say how old the water is? Explain that water on the planet earth is 4,5 billion years old and that through the water cycle it is moving in a circle. Ask the question: Can you imagine where the water was you drank: 1 day ago? 1 month ago? And 3 years ago?

(15 minutes): Distribute the sheets with tables to be filled in with answers to questions, and ask participants to answer the questions

(10 minutes): Discussion about the answers

- What do we use water for in our everyday lives?
- Can you imagine life without water?
- How will increasing temperature as a result of climate change affect water in nature?
- What can I do to protect water from climate change's negative effects and impacts?

**1**

Education partner and target group, content and goal

**2**

Abstract of the examined themes and target group

**3**

Eight Concepts on water issues

**3.1**

Experience of water by working at learning stations

**3.2**

Water in our everyday life

**3.3**

Research on waterbodies, organisms and water quality

**3.4**

Water Art on paper

**3.5**

Water and climate change

**3.6**

Water and history

**3.7**

Water and energy

**3.8**

Water games

**4**

Attachment

1.	What do we use water for in our everyday lives?	
2.	Can you imagine life without water?	
3.	How will increasing temperature as a result of climate change affect water in nature?	
4.	What can I do to protect water from climate change's negative effects and impacts?	

**1**

Education partner and target group, content and goal

**2**

Abstract of the examined themes and target group

**3**

Eight Concepts on water issues

**3.1**

Experience of water by working at learning stations

**3.2**

Water in our everyday life

**3.3**

Research on waterbodies, organisms and water quality

**3.4**

Water Art on paper

**3.5**

Water and climate change

**3.6**

Water and history

**3.7**

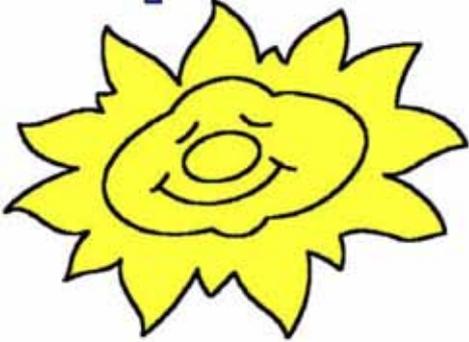
Water and energy

**3.8**

Water games

**4**

Attachment

<h1>Evaporation</h1> 	<h1>Condensation</h1> 
<p>Evaporation is when the sun heats up water in rivers, lakes or in the ocean and turns it into vapour or steam. The water vapour or steam leaves the river, lake or ocean and goes into the air.</p> <p>Make your own evaporation. With an adult's help, heat some water in a kettle. Watch closely! Do you see the steam rising? That's evaporation!</p>	<p>Water vapour in the air gets cold and changes back into liquid, forming clouds. This is called condensation. To see condensation in action, put a large piece of cardboard in the freezer for about an hour. Now, take the boiling kettle or water and hold the cold cardboard about 30cm over the spout – right in the middle of the steam. You will have to wear oven gloves to do this. Water droplets will form on the cardboard. That's condensation!</p>
<h1>Precipitation</h1> 	<h1>Collection</h1> 
<p>Precipitation occurs when so much water has condensed, that the air cannot hold the water any more. The clouds get heavy and water falls back to the earth in the form of rain or snow.</p> <p>If you continue the condensation experiment long enough, so much water will condense on the cardboard that it won't be able to hold it all. At that point, water will start dropping down. That is precipitation.</p>	<p>When water falls back to earth as precipitation, it may fall back into the oceans, lakes or rivers, or it may end up on land. When it ends up on land, it will either: soak into the earth or become part of the »ground water« that plants and animals use to drink; or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts all over again.</p>

**1**  
Education partner and target group, content and goal

**2**  
Abstract of the examined themes and target group

**3**  
Eight Concepts on water issues

**3.1**  
Experience of water by working at learning stations

**3.2**  
Water in our everyday life

**3.3**  
Research on waterbodies, organisms and water quality

**3.4**  
Water Art on paper

**3.5**  
Water and climate change

**3.6**  
Water and history

**3.7**  
Water and energy

**3.8**  
Water games

**4**  
Attachment