

# GREEN PLANET

WORKBOOK

FOR ADVANCED LEARNERS

Workbook on sustainability  
for 11<sup>th</sup>-12<sup>th</sup> grade secondary school students

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**KÉK·BOLYGÓ**  
ALAPÍTVÁNY

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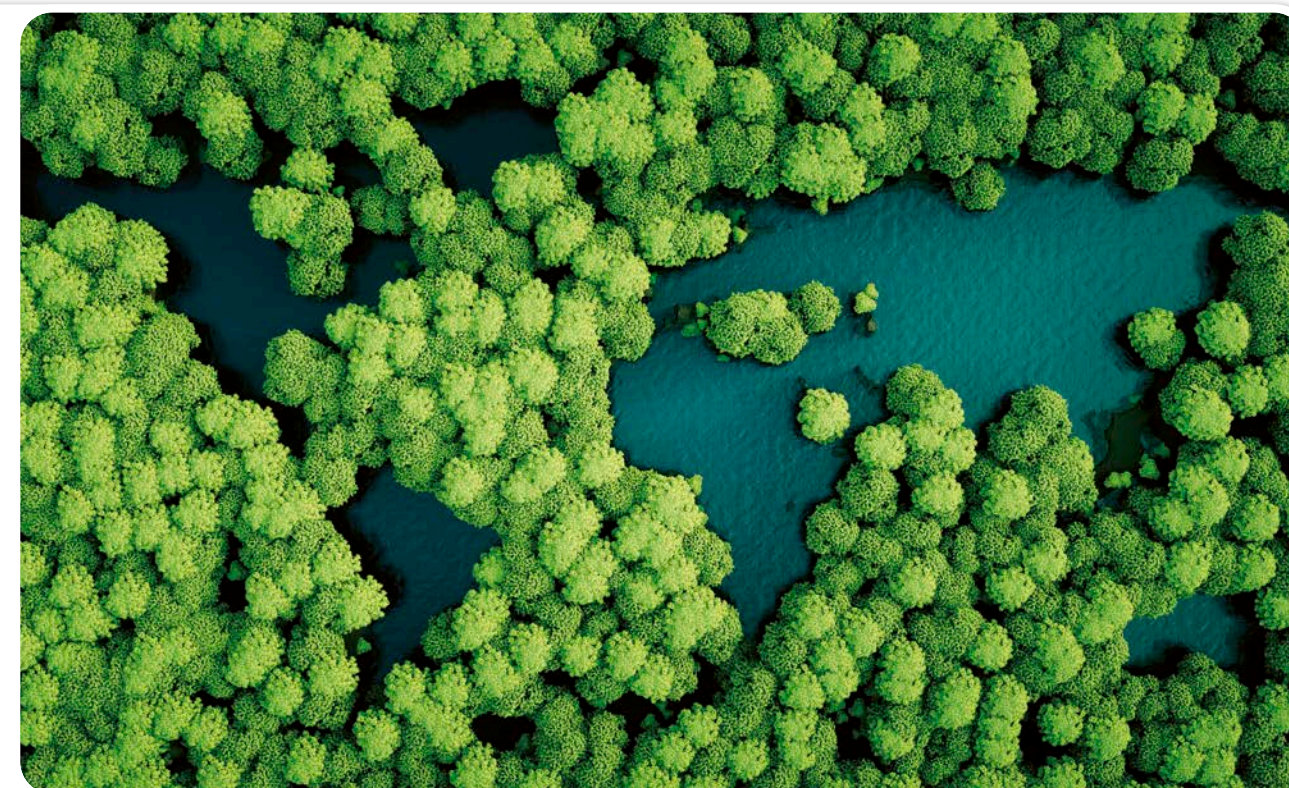
## PREFACE

Dear Student,

This workbook accompanies the Green Planet for Advanced Learners textbook. The purpose of this workbook is to help you understand the material, and to prepare you for the secondary school final exam. It provides an opportunity to conduct individual, paired or small group research and creative activities, complete project tasks and overcome exciting challenges.

We hope you will spend many happy hours with it!

*The authors*



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# EVERYTHING IS CONNECTED

## 1. Earth as a closed system



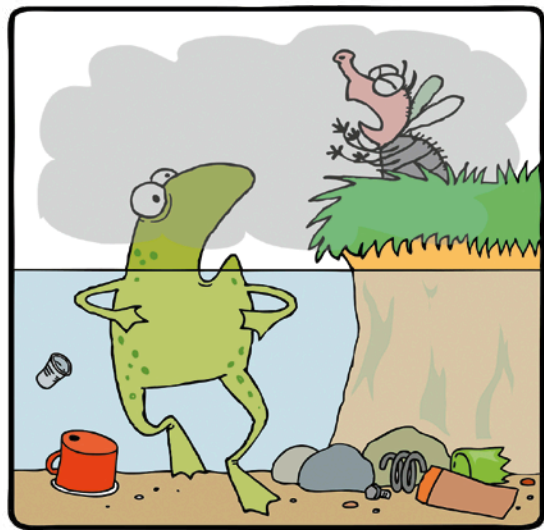
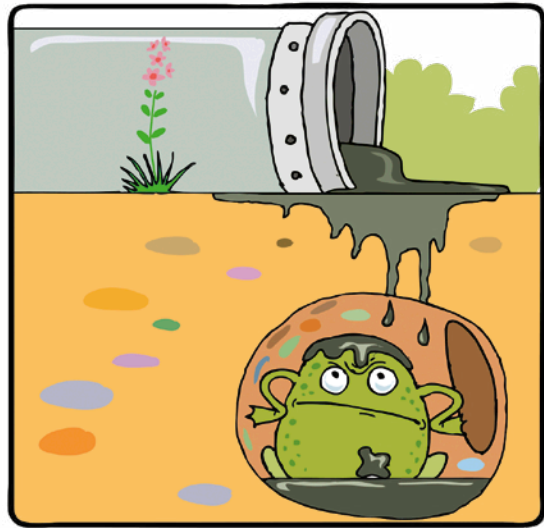
### a) The spheres

The Earth as a closed system can be divided into different functional units and spheres. List them!


### b) Anagrams in the spheres

The references below are part of a sphere, but the letters are mixed up. Figure them out, then connect them with the sphere they belong to.

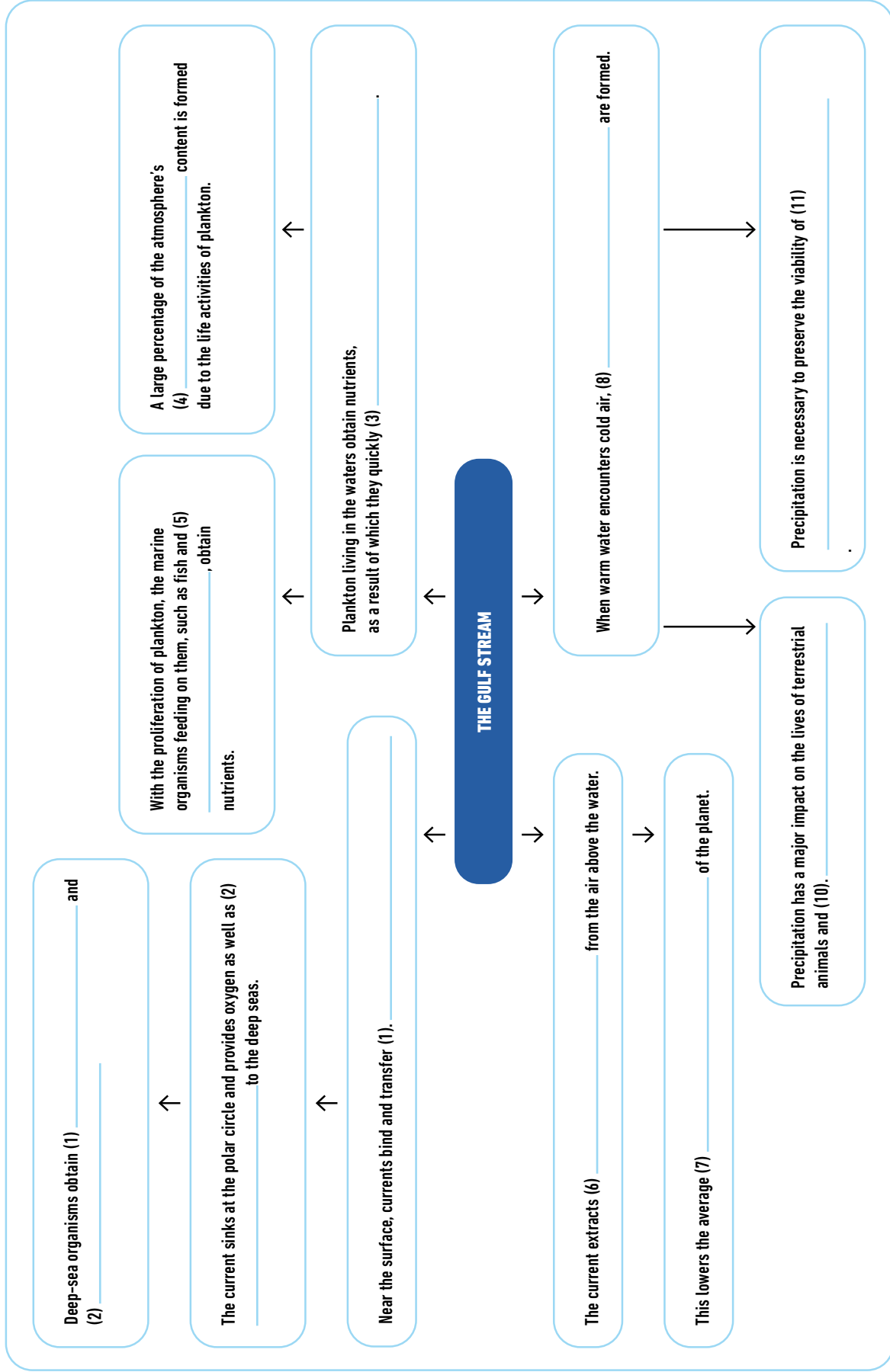
Anagram	Answer	Related sphere
TNFOREIRAS		
RACOL EFRE		
NOOZE YERLA		
OUARRA EARLISBO		
ACEON URCRNT		
CIGERAL		
OIPSLT		
RYURAQ		





– How does the Gulf stream impact the other spheres? Complete the mind map with the given expressions.

*nutrients, oxygen, soil, cyclones, plants, whales, oxygen, proliferate, precipitation, temperature, heat, nutrients*



**4. Radio reporting**

You work as a radio reporter, and you have to write a news summary based on an article on the effects of a hypothetical, future change. You are specifically requested to write the text clearly explaining each correlation for every viewer.

Text of the article:

Text of the news summary:

**NEWS**

"A group of US researchers discovered that the Gulf Stream was slowing down, and as a result, they noticed that the deep seas off the Arctic Circle were nutrient-poor. They were shocked to find that the case was not unique, as low levels had been measured for years. During their research, they noticed there had been news reports of declining food supplies in Western Europe. Some reported a drop of almost a third."

Blank lined area for writing the news summary.

### 5. Events of historical significance

There are many events of historical significance among the processes of the lithosphere that changed and transformed the landscape of the Earth to a great extent.

– Match the events with the dates.



The eruption of Mount St. Helens



The Indian Ocean tsunami



The eruption of Krakatoa



The eruption of Mount Vesuvius

26 December 2004

27 August 1883

18 May 1980

79

– Mark the location of the events on the map.



– What could have been the consequences of the event on the daily lives of people?

Name of event	Consequences
The eruption of Mount Vesuvius – Pompeii	
The Indian Ocean tsunami	
The eruption of Krakatoa	
The eruption of Mount St. Helens	

### 6. Seeking mineral resources

– Write the mineral resources below in the corresponding place in the table.

*natural gas, bauxite, potash, lignite, bituminous coal, halite, iron ore, uranium, copper, zinc, petroleum, diamond, silver*

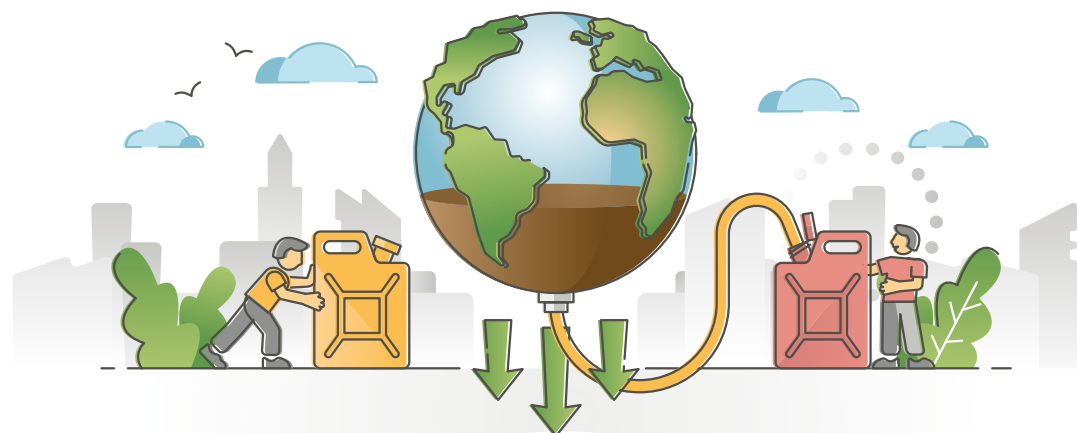
MINERALS		
Metallic minerals: ores	Non-metallic minerals	
	Energy sources	Other minerals

– What are mineral resources used for? Match them with the industry that uses them.

bauxite	food industry
limestone	aluminium industry
halite	cement production
copper ore	steel production
natural gas	chemical industry (fuel)
iron ore	telecommunications (electrical systems)



## 7. What you should know about fossil fuels



It is common knowledge that fossil fuels are being exhausted, and their use is causing serious environmental pollution. So the mayor of Lithos would like to decrease the amount of fossil fuels used by the city.

USE OF FOSSIL FUELS	
Arguments	Counter arguments

– What alternatives would you suggest to the city leadership if the municipality is described by the following data?

Characteristics of the city of Lithos

Number of windy days per year	270 days	Number of sunny days per year	1800 h
Average wind strength	6.2 m/s	Cloud cover	53%
Water temperature 1300 m deep	61°C		

Alternative energy sources:


– Create an infographic about the image of Lithos, incorporating alternative energy sources.

## 8. Deteriorating soil in Hungary

The table below shows the geographical distribution of soil affected by erosion in the most affected counties of Hungary. \*

Counties	Severely	Moderately	Slightly	Total	Area of county
eroded soil (thousand ha)					
Iron	29	36	45	110	333.6
Zala	44	83	47	174	378.4
Somogy	37	162	121	320	606.5
Baranya	24	67	70	161	443.0
Veszprém	144	52	51	247	446.3
Győr-Moson-Sopron	12	26	59	97	420.8
Komárom-Esztergom	17	65	100	182	226.4
Fejér	28	46	130	204	435.8
Tolna	40	90	75	205	370.3
Nógrád	63	59	25	147	254.4
Pest	43	44	52	139	639.0
Heves	19	39	29	87	363.7
Borsod-Abaúj-Zemplén	54	116	54	224	724.7
<b>Total</b>	<b>554</b>	<b>885</b>	<b>858</b>	<b>2,297</b>	<b>5,642.9</b>

– Calculate the percentage of eroded soil in the counties based on the data.

County	Soil erosion in %
Iron	
Zala	
Somogy	
Baranya	
Veszprém	
Győr-Moson-Sopron	
Komárom-Esztergom	
Fejér	
Tolna	
Nógrád	
Pest	
Heves	
Borsod-Abaúj-Zemplén	

– Name the three counties where the level of soil erosion is the highest.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

• Calculate the percentage difference between the county with the most and least eroded soil.

– Choose a county, and compare the level of soil erosion with the topography, hydrography and wind conditions of the county in question. Compile an analysis on this.

\_\_\_\_\_

\_\_\_\_\_

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– Make suggestions for reducing the level of soil erosion.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**9. The Sahel region in crisis**



View from the Sahel region

You are the leader of the Food and Agriculture Organisation of the United Nations, and you are being interviewed about the hunger affecting the region. As a UN leader, how would you answer the following questions of the reporter? For your answers, look up the location of the Sahel region.

Reporter: The Sahel region is one of the world's poorest regions. Which countries are affected?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: How did human activity transform the region?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: What are the correlations between the desertification of the region and climate change?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: What are the socio-economic reasons for desertification?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: What social problems are caused by the desertification of the Sahel region?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: How does corruption and the inappropriate distribution of aid relief influence the efforts to overcome hunger?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: What organised help is offered to decrease the hunger and malnutrition of children?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: What targeted measures do you plan to implement in the future to end hunger?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: How can water in the region be supplied in the short and long term?

UN leader: \_\_\_\_\_

\_\_\_\_\_

Reporter: How can we help the people living in the region adapt to the challenges of climate change?

UN leader: \_\_\_\_\_

\_\_\_\_\_



Reporter: How can the UN help to restore and preserve natural habitats?

UN leader: \_\_\_\_\_  
 \_\_\_\_\_

Reporter: How can the UN help to create harmony between environmental and social needs in the case of agricultural activity in the region?

UN leader: \_\_\_\_\_  
 \_\_\_\_\_

**10. Heap burning coals on your head – goes the Hungarian saying**

Many miners around the world lose their lives every year due to their jobs. There can be many reasons for these accidents; collectively, they are called mine risks. The greatest risk in underground coal mining stems from firedamp explosions, which is caused by an explosive mixture of methane and air entering the mine. As it is a colourless and odourless mixture, it is one of the biggest mining hazards. Apart from methane, other dangerous gases can also enter mines and cause workers there to suffocate. Dust hazard poses a similar problem too. Coal dust and other combustible dusts can even explode. Water intrusion is also a serious problem in many underground coal mines. Radiation hazard can cause problems primarily in uranium mines.



– What is underground mining?

\_\_\_\_\_

– What is a firedamp explosion?

\_\_\_\_\_

– Based on the text, list the dangers that miners are affected by. Why?

\_\_\_\_\_

– Find examples of mining accidents in Hungary. What caused the catastrophe?

\_\_\_\_\_

**11. Do some research on the map**

Find one of the Earth's great mining regions on Google Maps; one that you have already learned about in geography class for example.

Consider the following aspects during the assessment:

- What is the surface of the mining area like?
- Do they conduct underground or surface mining?
- Has the area been reclaimed?

Name of mining site: \_\_\_\_\_

Mined material: \_\_\_\_\_

Type of mining: \_\_\_\_\_




Surface of mining site: \_\_\_\_\_

Reclamation: \_\_\_\_\_

**12. Main locations of domestic mining**

We present three Hungarian surface mines below. Find them on Google Maps.

- Answer the questions.

Hungarian mines	What do (or did) they mine?	How do they use the mined material?
 <p>Visonta</p>		
 <p>Naszály</p>		
 <p>Gánt</p>		

– For which mine are the following statements true?

Statement	Name of mine
Among other things, they created a nature trail on the area of the former mine, which now functions as a visitor centre.	
Production is still under way in the mine.	
The mined material is used to make cement. On the areas where mining has stopped, they are trying to restore the original conditions by introducing indigenous plants to the area.	

– How does the landscape change due to surface mining?

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– Find domestic examples of how mining activities can influence the functioning of local biocenoses.

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– What can the economic impact be of reclaiming abandoned mining areas?

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**13. UK reclamation success story – National Forest project**

On a 520 km<sup>2</sup> area between Derby and Birmingham in the UK, which is nearly the size of Budapest, there were once coal and clay mines. The National Forest Plan was created in 1990 for implementation on abandoned mining sites. One goal of the project was to bring people closer to nature, so the re-greening of the area began, and they also linked two decaying old-growth forests together, Charnwood and Needwood, and enriched them with species. The tree-planting projects began in the 1990s, and since then the forest has been enriched with more than 9 million trees. This means that 20% of the area is now covered by forest; it used to be only 6%.

They built nature conservation areas, recreational parks and footpaths in place of the abandoned mines, and the former railway was replaced with a cycle path. The species richness kept growing, and people looking to go out into nature visited the National Forest more often. One of the biggest success stories was the transformation of Hicks Lodge, where in place of a 60-metre-deep former surface mine for coal is now a wooded park waiting for those looking to relax.

As the park expanded they built a bird sanctuary, a horse trail, and a forest school too, and it also earned the title for the largest cycle centre in the region. Thanks to the afforestation, the diversity of the fauna started to increase: owls, kites, larks and buzzards now fly above the forest, and over time, bats, butterflies and otters have also appeared. With the expansion of the forest, further growth in the diversity of the area is expected. Among others, they expect to see insects and small mammals appear. In his statement, the director of the National Forest Company also said that the area has undergone a complete transformation: not only has the quality of the air changed, but the rivers have become clearer, and the soil has become more fertile.



Hicks Lodge in the 1980s



Cycle centre today

– What kind of mine operated in the area?

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– What were the driving forces behind the reclamation?

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– What cultural and recreational opportunities await visitors to the centre?

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– How did the tree-planting project impact the living world of the local ecosystem?

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– What new species have appeared in the area?

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– What alternative opportunities are there to replacing fossil fuels?

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– Choose an alternative and argue for and against its use.

Arguments for:

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Arguments against:

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**16. Options for alternative agriculture**

You were invited to the conference of the Hungarian Agriculture Association as a speaker. They would like you to compare the options of industrial and environmentally friendly agriculture in your presentation. The primary objective of the event is to convince the participants to use alternative options instead of their usual solutions.



Mulching

Complete the table.

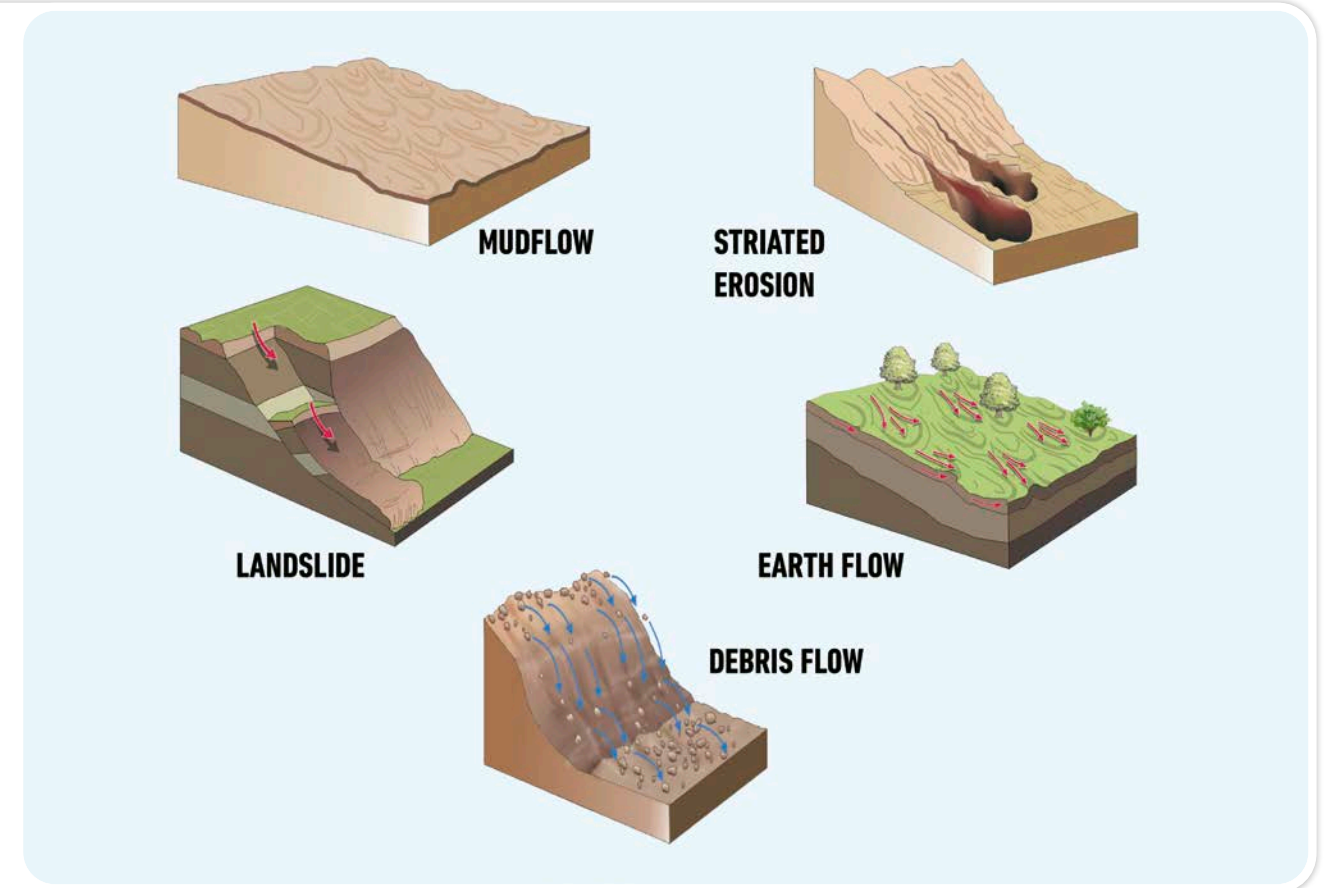
	Industrial solution used until now	Environmentally friendly solution
Strengthening soil		Use of organic fertiliser and compost, frequent changing of plants planted
Water replenishment of the soil		Drip irrigation, mulching (covering)
Protection against pests		Planting mutually beneficial plants beside each other, use of pesticides made of natural ingredients
Protection against soil erosion	Vertical ploughing, terracing	

Compile a short presentation and show it to your classmates.

**17. Types of soil erosion**

– You can see the different types of soil erosion in the graph below. Write the concepts in the corresponding place of the table.

*mudflow, debris flow, earth flow, landslide, striated erosion*



– In terms of soil degradation, we can talk about quantitative and qualitative degradation. Provide some examples.

Quantitative degradation of soil	Qualitative degradation of soil

**18. The story of mankind and the forest**

a) *The consequences of deforestation*

If only this was a fairy-tale, but unfortunately it's a true story. The forests of the Earth are decreasing every day, mainly due to human destruction.



Eradication of a Malaysian rainforest

– What are the economic reasons for the increasing deforestation in the tropics?

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– Describe how the deforestation of tropical rainforests contributes to the increase of soil erosion.

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– Due to daily rainfall in the tropical rainforests, the debris from the eroded soil flows into the large rivers. Where do the rivers take the debris? What changes does this cause in the new environment?

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– What are the consequences of soil degradation in the tropics?

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– What are the impacts of large-scale deforestation on the biocenosis of rainforests?

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– In your opinion, how could large-scale deforestation be stopped?

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– What are the reasons for cutting down temperate taiga forests?

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– List the potential environmental consequences of deforestation in the Carpathian Basin.

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b) *Deforestation is deforestation, even from different perspectives*

Split into groups and put yourselves in the shoes of a protagonist in connection to deforestation. Collect arguments and counterarguments for deforestation according to their point of view. Make a list of your own arguments in your notebook.

1. poor local farmer
2. banana field producer
3. head of the country
4. environmentalist activist
5. locals

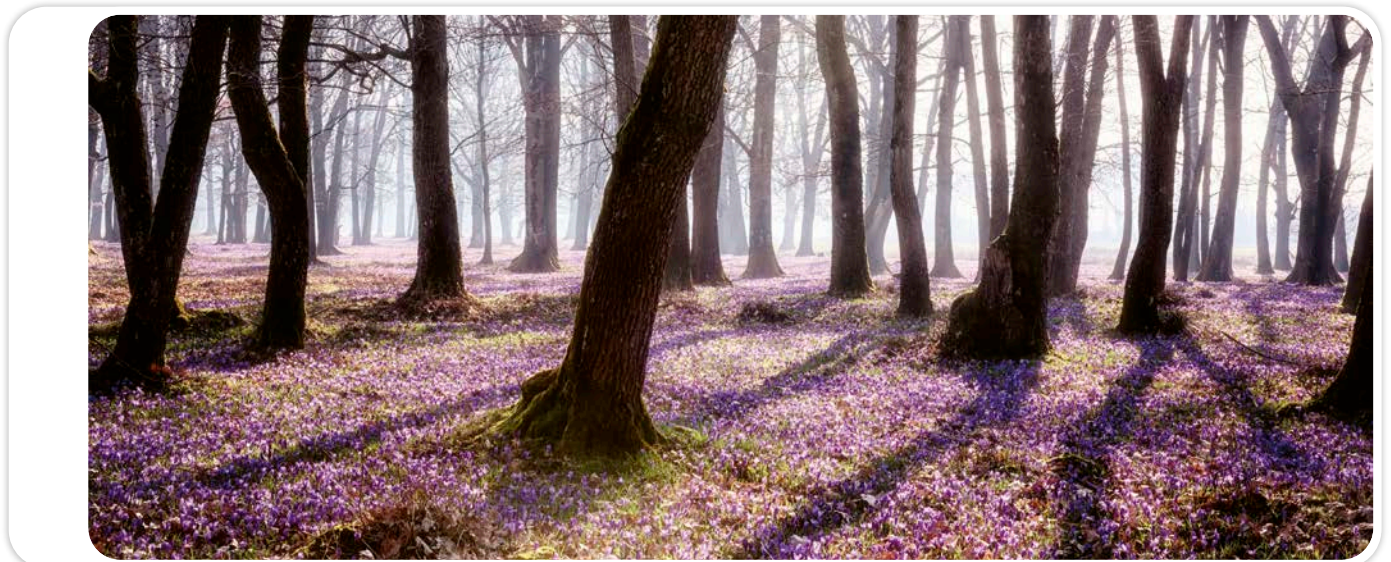
Contrast the interests of these characters on a forum, where the participants debate whether or not to cut down the local rainforests. What is the decision?

**19. Vital leaf cover**

Do you remember the cycle of the four seasons in a forest biocenosis? That the forest quietens down in the autumn, vegetates in winter, and revives in the spring? But what happens exactly?

Fallen leaves in the autumn create litter, which covers the soil of the forest like a winter fur coat. This not only protects the soil from the cold and the wind, but is also a source of all new life. It has microorganisms, bacteria, fungi, and earthworms working in it, and with their activity they degrade the matter of the litter into smaller organic components. All of this creates humus, which essentially is the organic matter of soil. Under the forest litter, the soil can retain a lot of water, which is the source of new life developing from the organic matter. One indispensable component of this process is sunlight, so the forest will only revive in the spring as the number of sunny hours increases. Then, at the end of summer, the microorganisms begin producing humus again from the dead plants and fallen leaves. And so it continues, year by year...

The forest has excelled in soil formation, but how are we humans doing in our farms?



It is common knowledge that the basis of our food production is the organic matter of the soil. This humus gives life to our vegetables, fruit, agricultural and feed crops, and we also feed our animals with these.

Where does the humus of our soil come from?

While organic matter in forests is created from the litter covering the soil, we humans do not cover our arable land; on the contrary, we tend to expose it with a plough for winter. There are no plant remains in this soil, so the microorganisms do not have much work to do. In fact, in winter such soil can freeze, fragment and also compact due to precipitation. By spring, the reserves cannot really recharge themselves, so organic matter is needed to help with the revival process. At best we try to restore and increase soil productivity with organic fertiliser, and in a worse-case scenario, with fertiliser.



Ploughed and vacant soil

It is also important that in order to achieve the high yield targeted we completely exhaust our arable land, and this is another reason why our soil needs extra nutrients. So while the soils of forests renew year by year, arable lands are constantly degrading; and their quality is mostly maintained by using fertilisers. Our activities intervene in natural processes, and we introduce too many harmful components to the material cycle. Inappropriate fertilising can enrich the nutrition content of natural waters, which ultimately can result in the degradation of an entire aquatic biocenosis.

- Compare the soil renewal process of forests and farms, and fill in the table based on the criteria given.

	Regeneration of forest soil	Regeneration of farm soil
Protecting soil from the cold		
Protecting soil from erosion		
Increase of humus content due to natural and artificial processes		
Loss of humus content		
Role of sunlight from a regeneration point of view		

	Regeneration of forest soil	Regeneration of farm soil
Importance of microorganisms in the process		
Organic matter at end of soil regeneration		

- Finish the sentences based on what you have read.

Microorganisms, fungi, and earthworms in the soil are...

Under forest litter, soil can...

As a result of freezing, uncovered soil...

To increase organic matter...

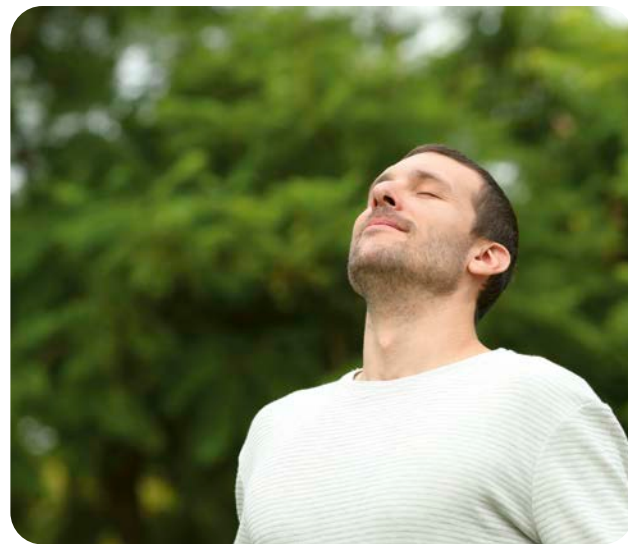
To increase the yield of our arable land...

- Make a short awareness film in which you introduce and compare the natural renewal process of forest soil with the soil renewal process of traditional economies. Make the video in a season of your choice based on the following aspects:
  - the existence or lack of soil cover,
  - humus content (based on the colour of the soil),
  - water supply of the soil,
  - external effects affecting the soil (sunlight, wind, etc.),
  - traces of soil erosion.



## 20. Relationship between the atmosphere and living organisms

Based on the images, describe what role the atmosphere has in the existence of living world.



## 21. Atmospheric gases

– Categorise the listed gases based on their frequency of occurrence in the atmosphere.

*carbon monoxide (CO), neon (Ne), ozone (O<sub>3</sub>), helium (He), carbon dioxide (CO<sub>2</sub>), oxygen (O<sub>2</sub>), ammonia (NH<sub>3</sub>), nitrogen (N<sub>2</sub>), water vapour (H<sub>2</sub>O), sulphur dioxide (SO<sub>2</sub>), argon (AR), hydrogen sulphide (H<sub>2</sub>S), methane (CH<sub>4</sub>), hydrogen (H<sub>2</sub>)*

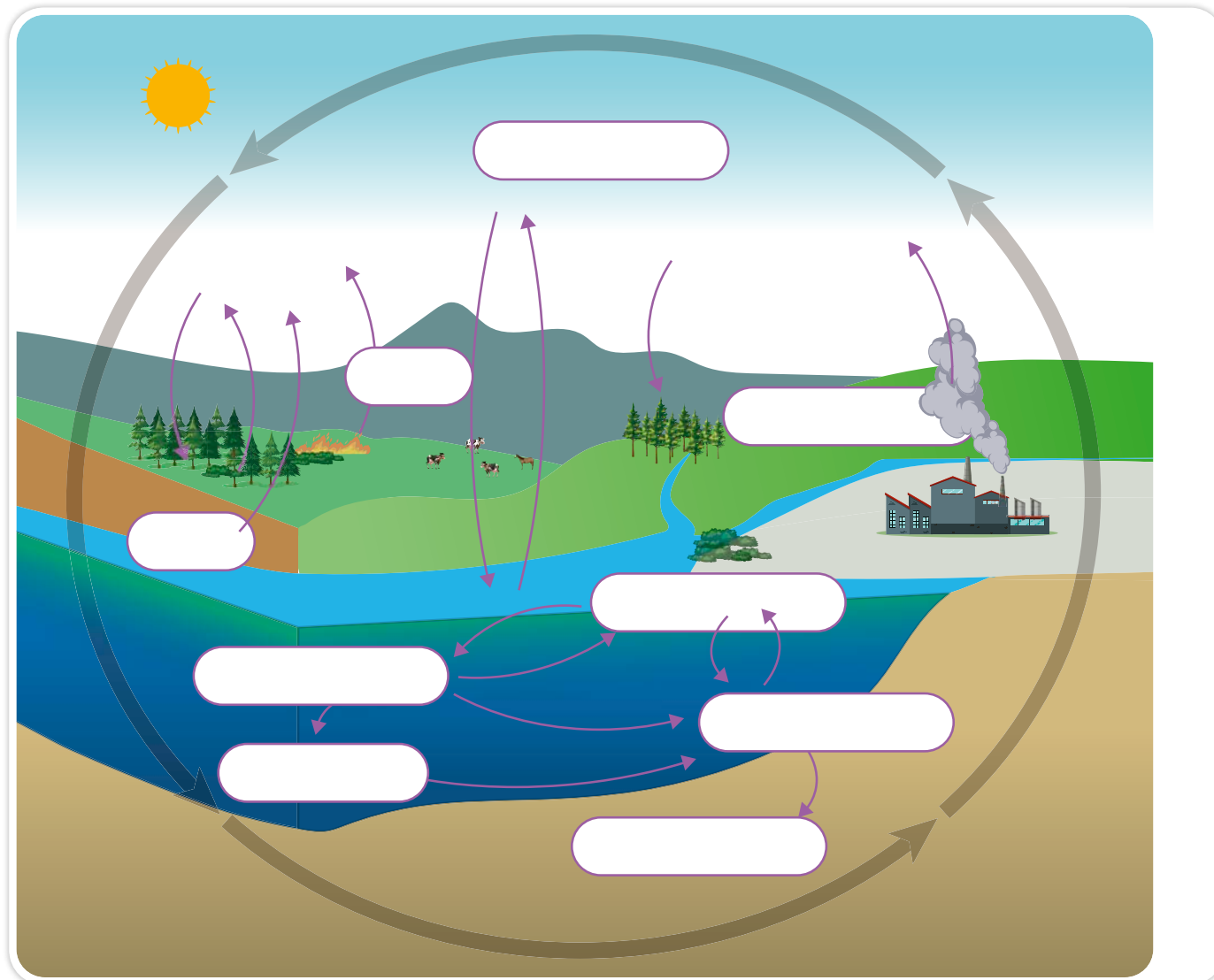
Permanent gases	Variable gases	Very variable gases

– List what gases can accumulate in the atmosphere because of the following activities and processes.

Activities, processes	Enriched gas
electricity generation	
transport	
chemical industry	
mining activities	
burning of fossil fuels in households	
agriculture	
waste management	
volcanic eruptions	

## 22. The carbon cycle

The following graph shows the carbon cycle. Complete it with the processes that characterise the cycle.



Carson Carbon, the famous atmospheric scientist, was asked during an interview about the carbon cycle and its change. But the disorganised journalist mixed up the questions and the professor's answers. Help him pair the right answers with the questions.

The uptake of carbon in living organisms and the return of carbon to the non-living environment are not balanced. Why is the balance of the carbon cycle upset?

Describes how carbon is stored and changed between the biosphere (living organism), the atmosphere (air), the hydrosphere (water) and the geosphere.

How does carbon return to the non-living environment?

The biosphere, the ocean, the sediments, and the lithosphere.

In what form is carbon present in the non-living areas of the hydrosphere and the atmosphere?

By burning fossil fuels, the carbon dioxide released is twice as much as the uptake of the plants and the ocean. Mankind contributed to this by modifying the ecosystem and by using fossil fuels more intensively.

In what form is carbon present in the non-living environment of the geosphere?

It is present in carbonate ( $\text{CaCO}_3$ ) rocks, such as limestone or coral skeletons. Carbon is part of dead organic matter too, such as humus in the soil. Fossil fuels (carbon, oil, natural gas) from once living organic matters can also be listed among these.

What are the main carbon dioxide reservoirs?

Carbon in the air is present in the form of carbon dioxide ( $\text{CO}_2$ ). From the carbon dioxide in the atmosphere, soluble hydrogen carbonate is formed ( $\text{HCO}_3$ ), which is a non-living carbon source found in the hydrosphere.

How does carbon get from non-living organisms to living ones?

Carbon moves to living organisms through the matter exchange processes of autotrophs. These are organisms that are able to create their own organic matter from non-organic matter. Some use the energy of the light (photoautotrophs), while others use the energy stored in chemical bonds (chemoautotrophs).

What is the carbon cycle?



### 23. The impact of mankind on the carbon cycle

- Which human activities interfered with the natural carbon cycle? Find out and make a diagram of the causes and effects.

- Choose an activity and make suggestions to stop the process.


### 24. Acidic precipitation and its impact

Put the process of acidic precipitation formation in chronological order.

- The emerging atmospheric acids are also involved in cloud formation.
- The combustion products react with the water vapour molecules of the air.
- Acids form: carbonic acid, sulphuric acid or nitric acid, among others.
- The burning of fossil fuels, such as coal, oil and natural gas.
- The production of nitrogen oxides and sulphur oxides, in addition to carbon dioxide and water.
- The upwards moving air carries the produced acids.

How does acidic precipitation affect vegetation?

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How does acidic precipitation influence soil quality?

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Find out which large industrial areas account for most of the acidic precipitation in Europe.

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Which forests of Europe are the most endangered due to acidic precipitation? Why?

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Find out what results have been achieved in mitigating the problems caused by acidic precipitation.

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### 25. Traces of acidic precipitation in everyday life

Find places and outdoor objects where you live that have traces of acidic precipitation on them. Create a poster and photomontage from these to raise awareness.

### 26. Experiment!\*

a) *Modelling the formation of acidic precipitation*

Tools needed: beaker, glass pane, plastic water spray, tweezers, indicator paper, sulphur sheet, matches, distilled water.

Experiment description:

- Place the lit, burning sulphur sheet in the beaker, then cover it with the glass pane.
- Once it burns out, take off the glass pane, and with the help of the water spray, add plenty of water to the beaker, then shake it.
- Examine the reaction of the solution (acid rain) with the help of the indicator paper.

b) *Impact of acid precipitation on the non-living environment*

Tools needed: tray, 2 beakers, dropper, limestone, marble, 2 pieces of chalk, diluted hydrochloric acid, paper towel, water.

Experiment description:

- Pour water into one beaker and hydrochloric acid into the other, then put a piece of chalk in each of them for 20-25 minutes.
- At the end of the specified time, take out the chalk from the beakers and examine them. What happened to the chalk?
- Place the limestone and the marble on a tray covered with paper towels, then drop hydrochloric acid onto them.
- What happened to the rocks?

c) *Impact of acid precipitation on the living environment*

Tools needed: glass dish, sulphur sheet, matches, colourful flower or green leaf.

Experiment description:

- Place the plant piece under the glass dish, then place the lit sulphur sheet next to the plant (under the glass dish).
- What happens to the plant?

**27. Examination of particulate pollution**

Examine the amount of particulate pollution that has stuck to the vegetation near your home or school. Plan the examination.

You can carry out the examination by taking samples at certain distances while moving away from a busy road. It is important in this case to take the sample at the same height and if possible, from the same kind of plant. It may also be interesting to examine the amount of dust stuck on the leaves of different plant species too. Find an explanation as to why certain plants had more dust on them.

Description of examination:

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Experiences:

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Conclusions:

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**28. Ozone depletion**

Find national and foreign articles from the 80s and 90s that talk about the depletion of the ozone layer. Collect scientific facts from them, and any fake news. Discuss which news items are factual, and which ones do not adhere to scientific standards.

Scientifically-based facts:

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Fake news:

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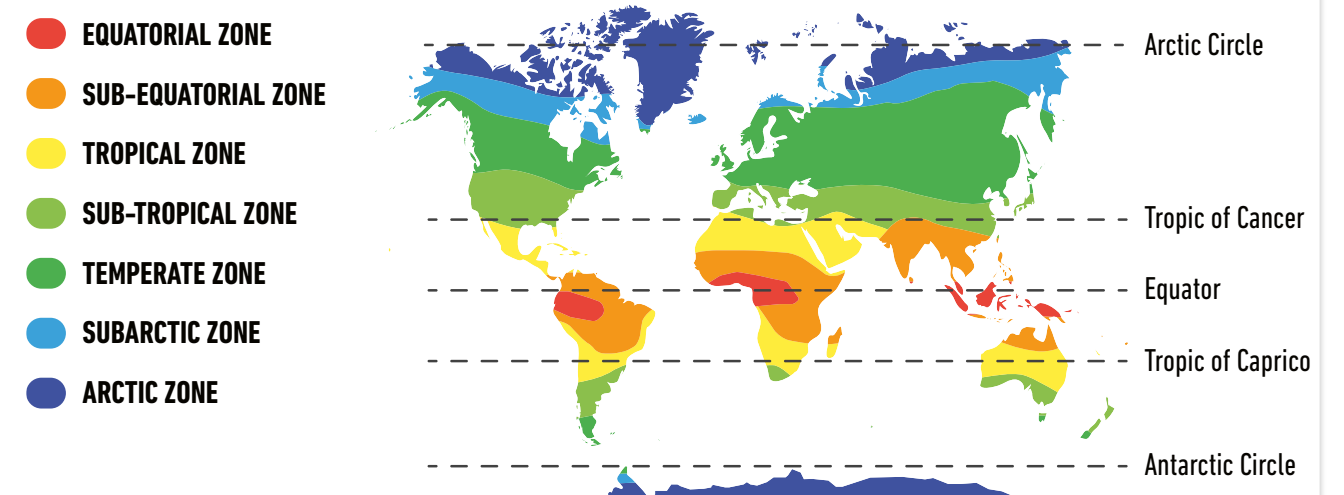
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**29. Changing climate**

Make a list of the (possible) impacts of global climate change in the temperate zone.

We always speak negatively about the impacts of global climate change. Think about it, are there any positive effects of climate change? What could these be?

Use the following map for help.



**30. Bush and forest fires**

"A historic heat wave and wildfires have been scorching Greece in the last few days. Some residents of the capital have also had to be evacuated. Fires have started in more than 100 places all over Greece due to the extreme heat and the stormy wind. The flames have also reached the northern agglomeration of Athens.



Burnt down forest – Greece, 12 August 2021

Thousands of people have had to leave their homes due to the fires. The mayor of the city asked the people living in the area to move to the countryside for this difficult period, if they can. Those who have to stay should wear a mask to protect against the smoke and ash.

The island of Evia, located east of Athens, has also been evacuated; they have been trying to extinguish the fire there for several days now. In Athens, it is also the job of the fire brigade to ensure that the flames reach neither the densely populated areas nor the historic sites.

To ensure this, one of the motorways in the capital had to be closed off too. Several hotels have offered their services free of charge to those affected by the bush fires. The fire departments of neighbouring countries and the European Union are also taking part in combating the disaster.

– What climate and vegetation are typical of the area?

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– What are the reasons for forest fires?

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– What tools are available to combat forest fires?

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– What are the social and economic consequences of forest fires?

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– Look into the biggest bush fires of the recent period. Which regions are typically affected? Why?

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– What could be the positive effects of natural forest fires?

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**31. The Kyoto Protocol**

Recall your previous studies on the Kyoto Protocol.

– When and where was the agreement reached?

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– Why was the agreement reached?

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– The countries who signed the agreement account for more than 60% of carbon dioxide emissions. How many countries have signed the agreement to this day?

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– Name countries who have not signed the agreement.

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– What is the main objective of the agreement?

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– What results did the agreement achieve?

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– Look up the results that Hungary achieved after joining the agreement.

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– Name another significant climate change agreement.

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**32. I can do something too!**

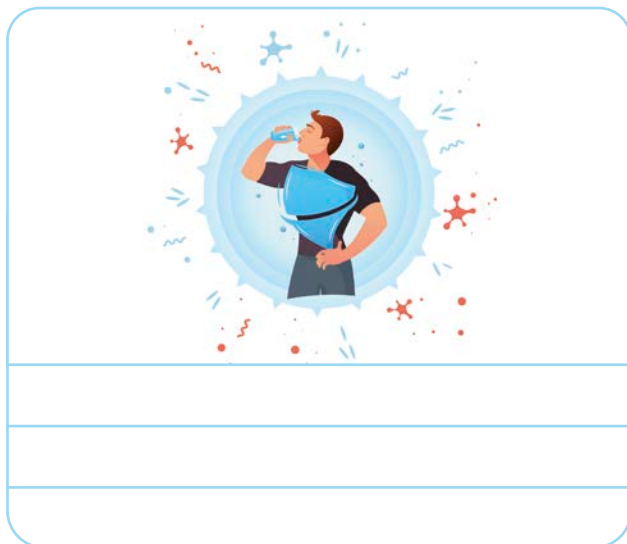
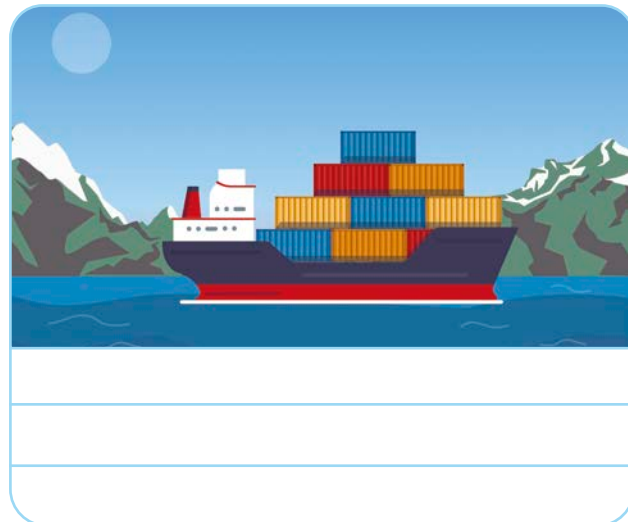
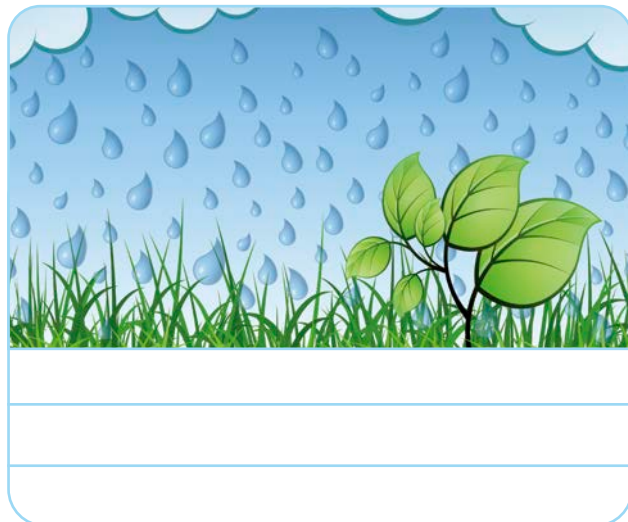
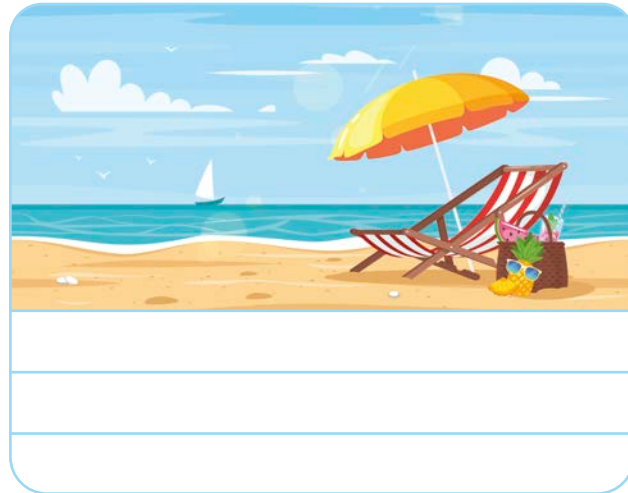
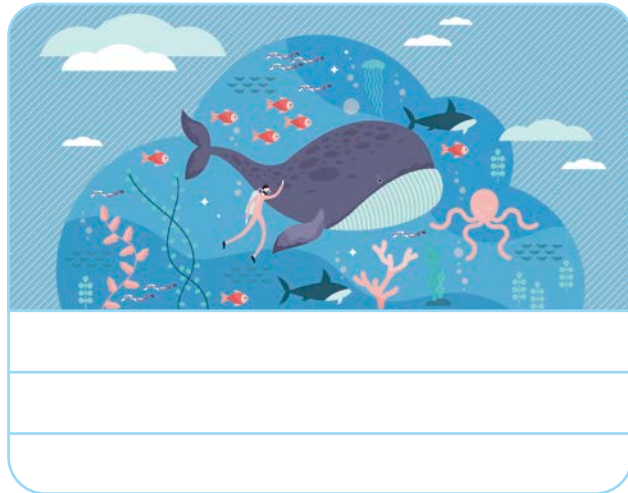
What can a secondary school student do to reduce air pollution?



Compile some ideas that can be implemented by every young secondary school student in order to reduce air pollution.

**33. Water and mankind**

- How would you describe the relationship between humans and natural waters?
- What are your thoughts and feelings based on the images?
- Write at least three concepts under the images.

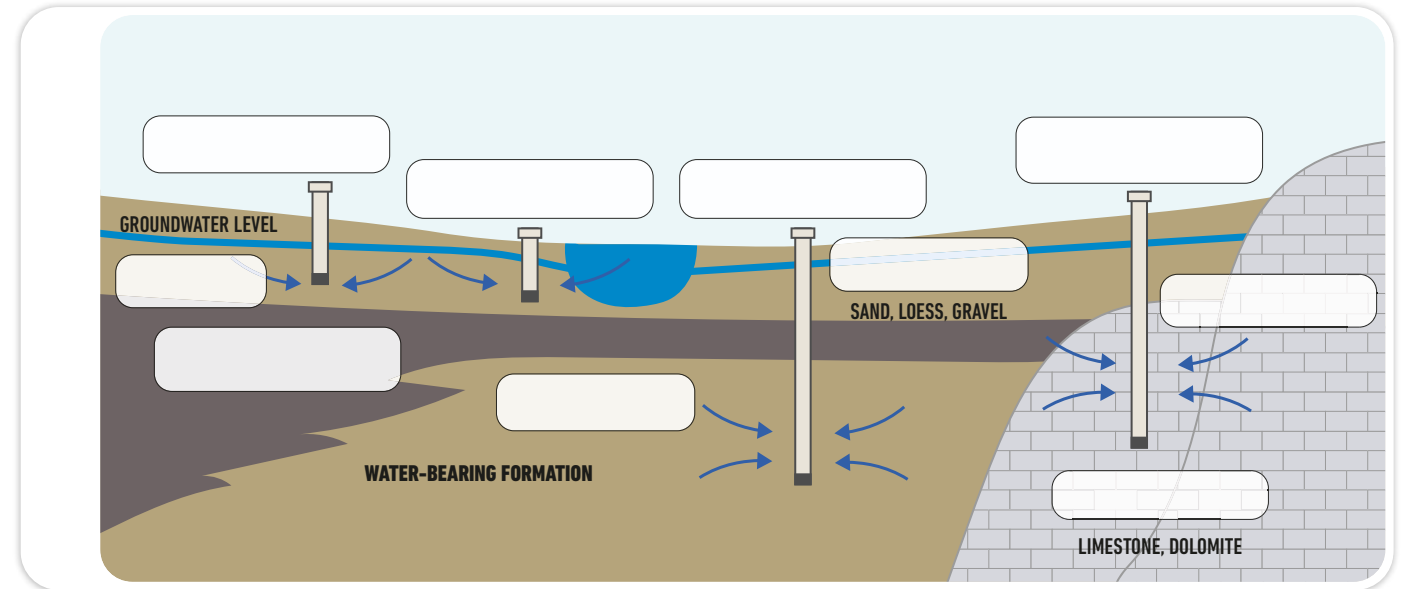


**34. Where does drinking water come from?**

In the following graph, you can see a few options for extracting drinking water.

- Name the different parts of the graph by using the following expressions.

karst rock, karst water, karst well, artesian water, artesian well, river, groundwater, groundwater well, shore well, impervious layer, aquifer layer



Answer the questions.

- How were the groundwater systems formed?

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- What does the supply of groundwater resources depend on?

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**35. Renewable energy sources are the key to the future**

"A transformation of this scale is unprecedented, but this is not the first time that mankind is looking for another type of fuel. In ancient Alexandria, they utilised the power of steam; the seamen of the ancient world travelled the seas by the power of wind; the industrial revolution brought along the revolution of carbon and steel; and the explored oil fields of Texas in the 1990s brought the age of fossil fuels. In the last decades, carbon, petroleum derivatives and nuclear fuel cells have provided energy. The use of renewable resources did not start today either, but their mass spread is a relatively new phenomenon. The diversification of the energy industry is necessary for more than one reason:

- The Earth has to breathe. We cannot meet the energy needs of 7.8 billion people with fossil fuels. More precisely, we could, but the reserves would not last long, and the planet could not endure the environmental impact of this either. To keep the global average temperature from increasing by more than 2 degrees Celsius compared to the temperature at the beginning of the industrial revolution, we will need new energy resources.

- Our energy needs are increasing. With the population growing, our energy need is also increasing: it is predicted that by 2040, energy consumption could increase by a third. The increasing demand can only be satisfied by decreasing carbon-based energy resources, digital distribution, connecting the systems, and modernising the energy grid.
- Reduces vulnerability. There are not just commercial considerations between the players of the energy market. One example for this is Russia, where the state would like to assert its geopolitical interests through the market of fossil fuels. Another example is the 1973 oil crisis in the USA, which broke out due to prices tripling in states who were rich in oil. Then, six years later, there was another 150% rise in prices after the transition of power in Iran. Everybody felt the consequences of vulnerability.”\*
  - Complete the timeline with the historically significant energy resources from the text. Come up with arguments for and against their use. Give the timeline a name.

TIMELINE TITLE

arguments for:	←	arguments for:
arguments against:	→	arguments against:
arguments for:	←	arguments for:
arguments against:	→	arguments against:
arguments for:	←	arguments for:
arguments against:	→	arguments against:

- According to the text, what reasons necessitate a transformation of the energy market?

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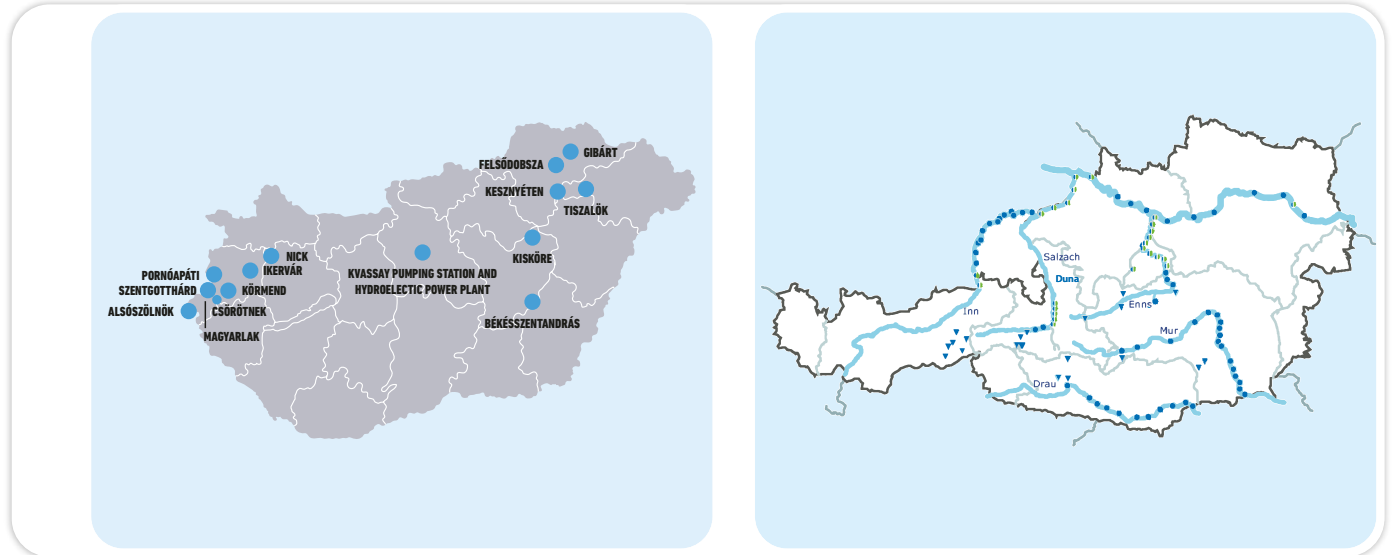
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### 36. Hydropower plants in Hungary and abroad

Using the maps, compare the hydropower energy recovery of Hungary and Austria.



- What geographical factors contribute to Austria having way more hydropower plants than Hungary?

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- Do you think there could be more hydropower plants built in Hungary? What conditions is building a hydropower plant subject to?

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- Come up with arguments on the benefits of operating a hydropower plant.

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- What environmental impact, ecological dangers and other problems can the use of hydropower plants cause?

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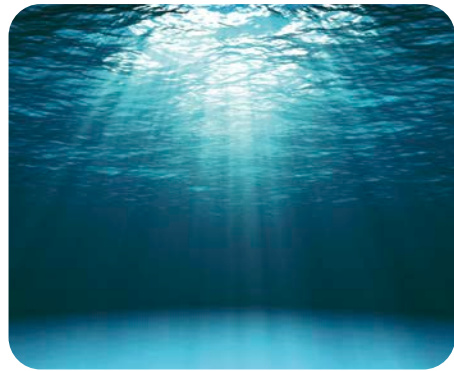
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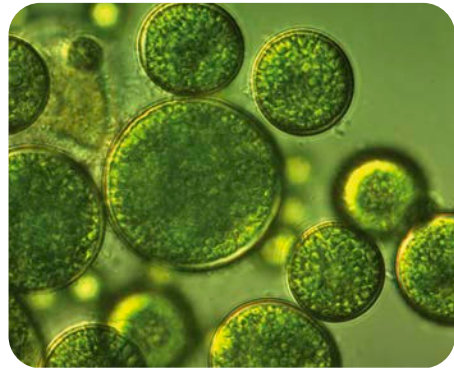
### 37. The aquatic ecosystem and carbon dioxide

Using the images, describe how seas and oceans take part in regulating the carbon dioxide level of the atmosphere.

Regulation of carbon dioxide level



Handwriting lines for describing the first image.



Handwriting lines for describing the second image.



Handwriting lines for describing the third image.

– How does the warming of the seas and oceans impact the binding ability of CO2?

Handwriting lines for the answer to the first question.

– Why can we say that the seas and oceans regulate the climate?

Handwriting lines for the answer to the second question.

– How do near-shore seas affect the climate?

Handwriting lines for the answer to the question about near-shore seas.

### 38. Members of the water purification agency

Which living organisms take part in the self-purification of waters, and how do they help this? Create business cards for the water purifiers with a short introduction.



Handwriting lines for creating a business card for organism 1.

Handwriting lines for creating a business card for organism 2.

Handwriting lines for creating a business card for organism 3.

### 39. Safer water, better health

There are still many deaths because of contaminated water in certain regions of the Earth. According to the WHO, six out of every hundred people die due to a lack of clean water. Contaminated water and the lack of sanitary facilities mean malaria, typhoid and cholera still claim many victims in developing countries.

According to the WHO, improving water quality in certain African countries could save one fifth of the population. More than one tenth of serious illnesses could be prevented if everyone had the right to clean water and appropriate hygiene conditions.

Improving water quality could contain diseases frequent among children, such as cholera, typhoid and dysentery, and decrease the large number of infant mortality rates.

- Which diseases can be spread by contaminated water? Fill in the table. Look up the symptoms of each disease.

1.

Condition	Symptoms

2.

Condition	Symptoms

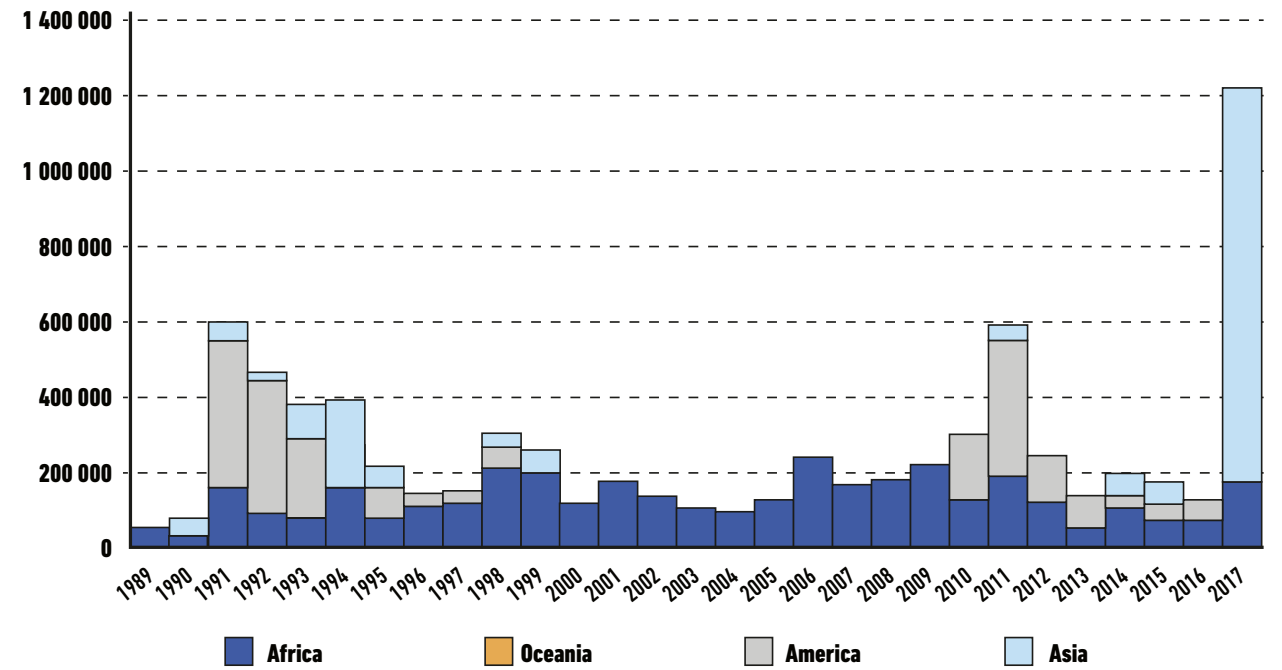
3.

Condition	Symptoms

4.

Condition	Symptoms

- The following graph shows cholera cases in different continents between 1989 and 2017. After studying the graph, answer the questions.



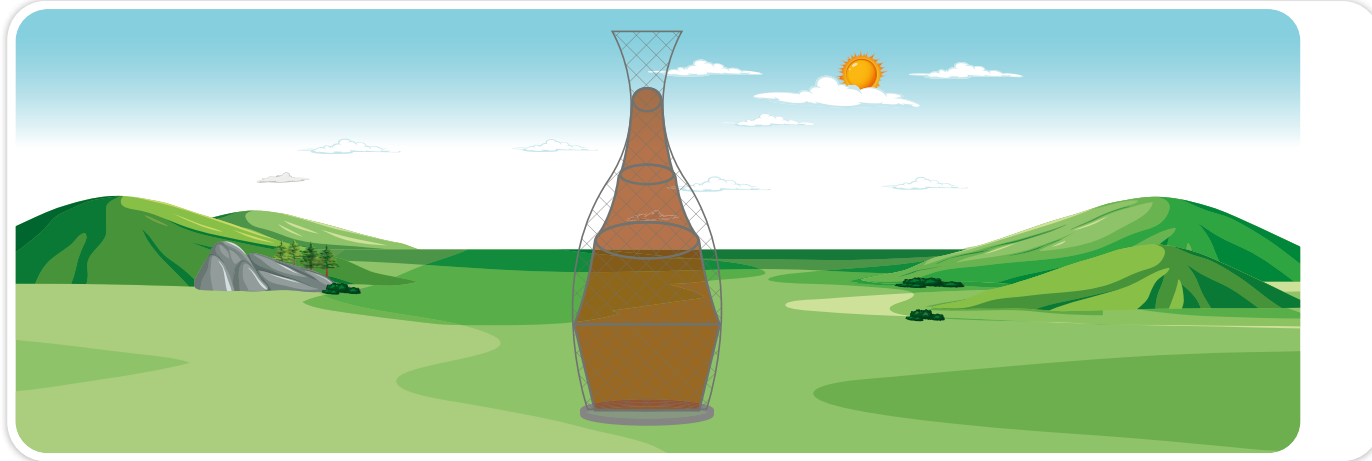
- In which years did cholera cases appear more prevalently?
- On which continent is cholera almost always prevalent?
- There was a big spike in 2017. Which continent can it be linked to?

Although we thought a serious cholera pandemic was not possible in the hygiene conditions of the 21<sup>st</sup> century, this statement proved to be false by 2017. This is when a massive cholera pandemic broke out in Yemen, where 70-80% of the population cannot get access to clean and good quality water. The pandemic claimed many fatalities between 2017 and 2018 as most of the infections were fatal.

- Describe how water quality and the emergence of a pandemic are connected.
- How could the cholera outbreak have been prevented? What pandemic-preventing strategies would you set for the government?

#### 40. The Warka water tower

The design of the water tower with a characteristic bamboo shape can be linked to Arturo Vittori, who had a new way of collecting clean water in mind when he designed the building. This solution was typically used in the villages of Ethiopia, where collecting water and accessing clean water is really difficult as most of the natural waters are contaminated. The water tower is particularly favourable for locals, as it is easy to build and is cheap. The towers are built from bamboo, and their interior is insulated with polyester mesh netting. The atmospheric vapour from rain, fog and dew settles on the polyester mesh, and it flows down as water into the container found at the bottom of the structure.\*



– Why has it become necessary for the Ethiopian population to introduce a new technique for collecting water?

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– Why is the bamboo structure beneficial?

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– What is the water collecting mechanism of the water tower?

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– What does the performance of the structure depend on?

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– In your opinion, can a water tower have a social bonding role in an Ethiopian village?

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– Describe the positive aspects of the Warka water tower.

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#### 41. What you should know about water pollution

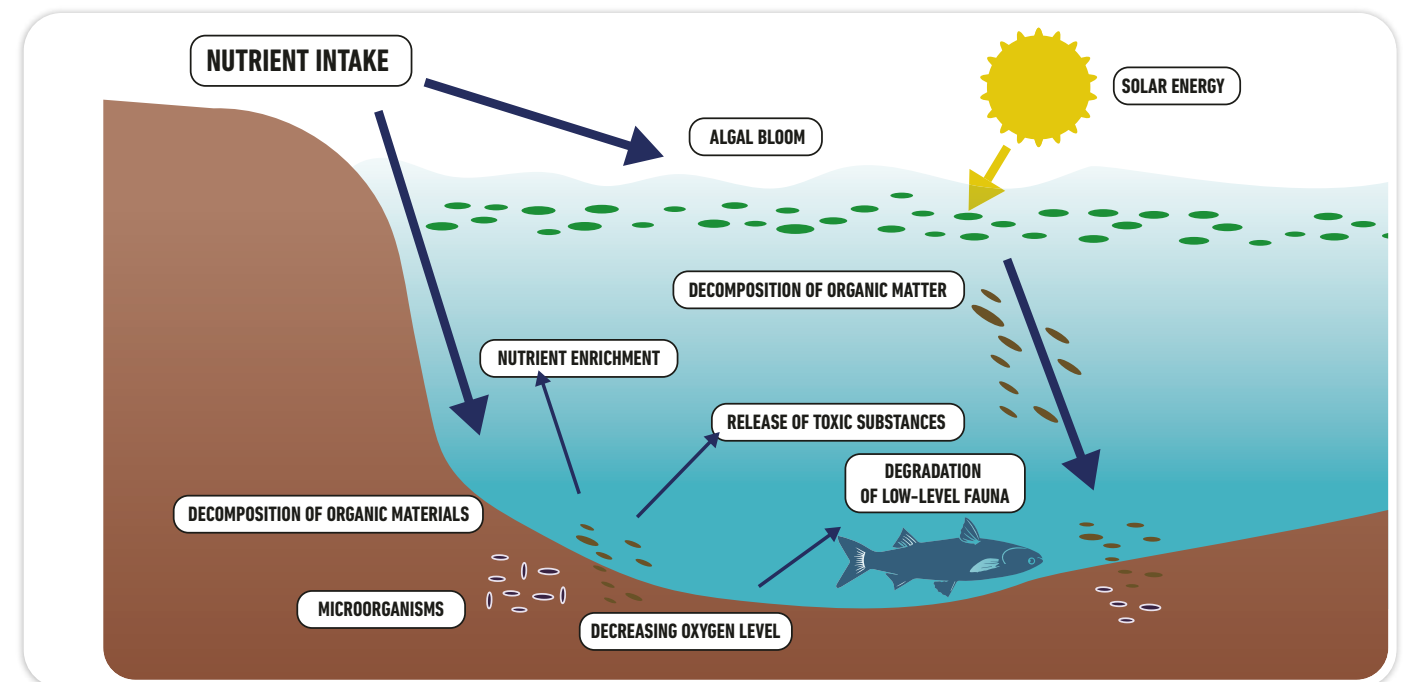
Make a poster summarising the types of water pollution. Complete the poster with information according to the following aspects:

- What are the illustrated types of water pollution?
- What causes pollution and what are its possible consequences?
- How can it be prevented?



#### 42. Eutrophication

The following graph illustrates eutrophication, the process that leads to algal bloom.





– Describe what the roles are of the following aspects in the process.

phosphates and nitrites	
algae	
solar radiation	
oxygen dissolved in water	
putrefying bacteria	

– Make connections between the following expressions.

a) change in nutrient concentration – stable aquatic ecosystem

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b) algae – anaerobic conditions

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c) our agricultural practices – water soluble nutrients

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– How does eutrophication change the functioning of aquatic ecosystems? What could be the consequences if the ecosystem is disrupted?

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– We use many phosphorous cleaning and detergent products in our households. What alternatives could we use instead of these in our chores?

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– Make a list. What habits should we develop at home to help prevent eutrophication?

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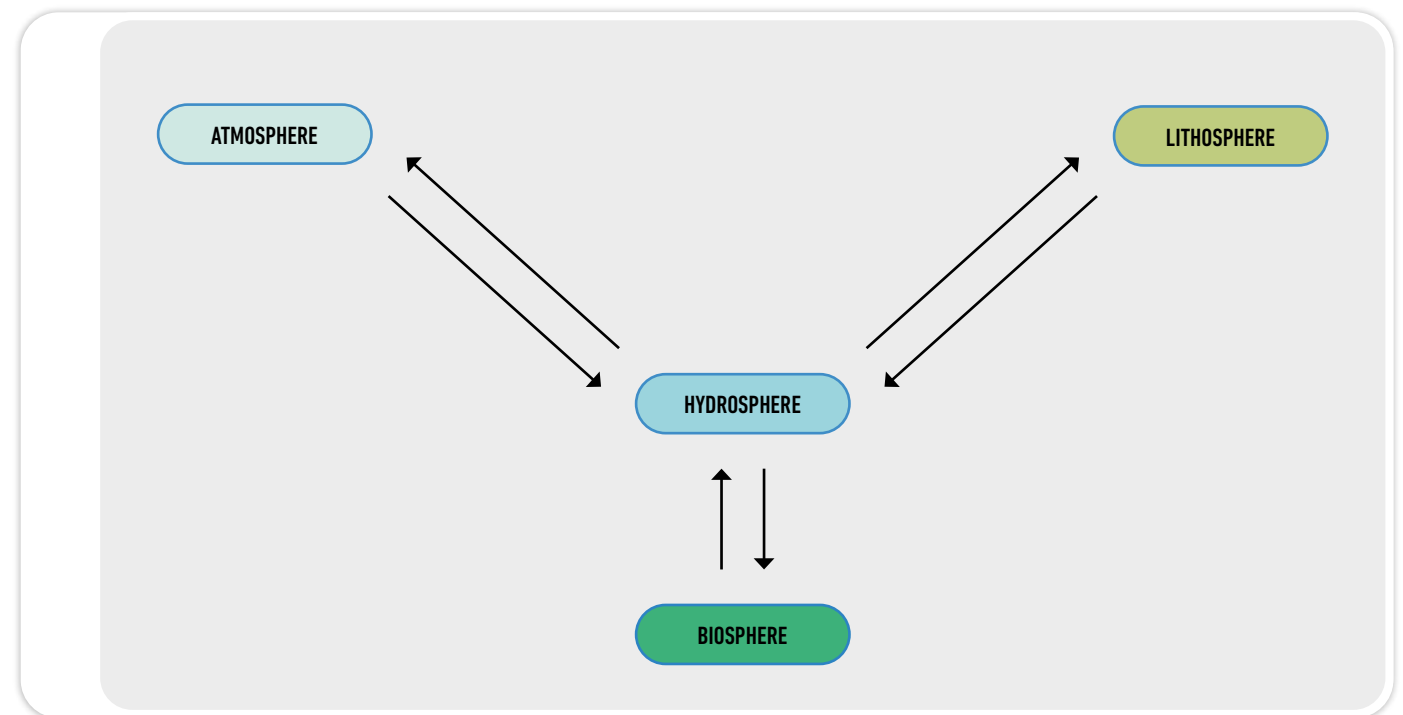
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**43. Systems thinker**

Complete the graph. By means of what processes does the hydrosphere affect the other spheres, and vice versa?



**44. Classifying services**

Place each ecosystem service in the appropriate place.

*flood mitigation, food, energy sources, soil formation, recreation, air quality, ecotourism, raw materials, climate regulation, art, water, inspiration, cultural heritage, nutrient cycle, evolution, drought mitigation, aesthetic values, erosion control, water quality*

PROVISIONING SERVICES	REGULATORY SERVICES	SUPPORTING SERVICES	CULTURAL SERVICES

– Through its services, the ecosystem makes a great contribution to our safe and balanced life. What is the basis of the ecosystem services?

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– What could be the implications if the composition and function of the ecosystems change due to human activities?

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**45. The engineering turtle**

Engineering activity of the ecosystem



This animal is rightly called an ecosystem engineer because its existence impacts on the lives of many species. To protect itself from predators, extreme weather conditions and forest fires, it digs enormous holes, which can stretch for hundreds of metres in the sandy soil. These heaps of sand provide a home for the plant vegetation of the area. In certain periods, the hole serves as a hiding place and shelter for animals like the gopher frog or the eastern indigo snake. There are some species, however, which have an even closer relationship with this ecosystem-engineer species. For example, the lives of some invertebrates are completely bound to the life of the engineer. There are some bugs that live on its outer shield, while others, e.g. certain butterflies and their caterpillars, feed on its faeces.\*

– What makes a species an ecosystem engineer?

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– Which landscape-shaping activity is presented in the text?

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– How does this particular species impact on the life of the eastern indigo snake?

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– Describe how the disappearance of the species would impact on the living organisms of the ecosystem.

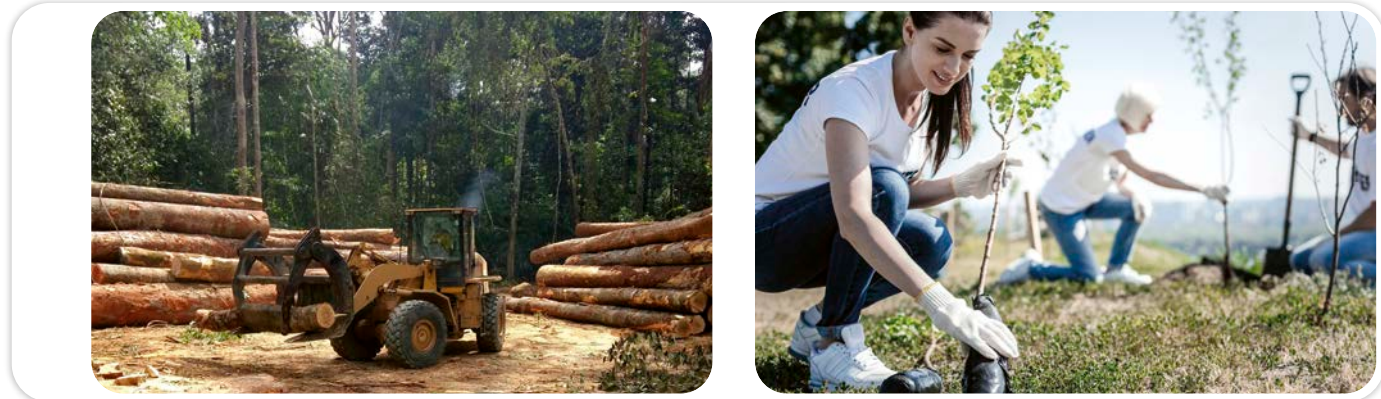
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**46. Mankind as an ecosystem engineer**

By means of their activities and by transforming their environment, ecosystem engineers can affect the lives of other species both in a beneficial and detrimental way. Humans can rightly be called ecosystem engineers, since their life activities have a major impact on the lives of other species, and really interfere with the functioning of the ecosystems. Of course, their activities transforming the living world can not only have negative effects; there are many positive examples too. Think and do some research on positive as well as negative examples regarding humans' ecosystem engineering activities. Example:



Negative examples	Positive examples

**47. Biome finder**

– Match the images and the statements with the appropriate biomes.

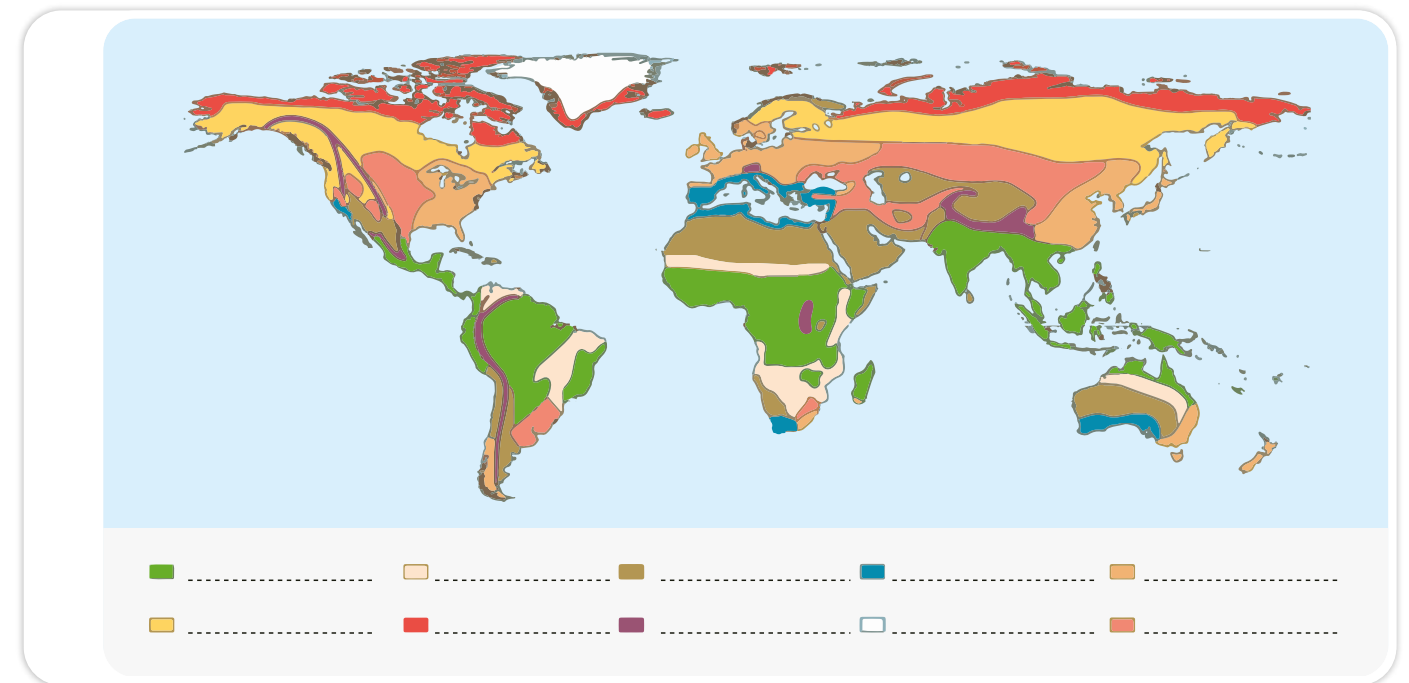
Image number	Statement letter	Image number	Statement letter	Image number	Statement letter	Image number	Statement letter
Image number	Statement letter	Image number	Statement letter	Image number	Statement letter	Image number	Statement letter
Image number	Statement letter	Image number	Statement letter				



Statements:

- a) Due to human activities, we often only see secondary vegetation.
- b) Characterised by a multilevel canopy, one of Earth's regions with the highest species richness.
- c) The empire of harsh winters, cold wind and ice, and rich in fauna.
- d) Characterised by cold-tolerant coniferous plants, and inferior plants.
- e) We differentiate between woody, bushy, and grassy types. Its characteristic plants are the baobabs.
- f) Its sand, dust and rock deserts are characterised by daily temperature swings.
- g) Comprises vast pinewoods, typical of the northern hemisphere.
- h) Altitudinal zonation can be observed here.
- i) Characterised by extreme heat and vast deserts interspersed with oases.
- j) The biome of deciduous forests and large mammals.

Name the biomes of the Earth based on the map.



**48. Loss of biodiversity**

– Which forms of ecological degradation contribute to the loss of biodiversity?

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– Find domestic and global examples for once natural habitats, which are changing due to ecological degradation.

	Domestic examples	Global examples
1.		
2.		
3.		

- Describe why biodiversity is important in terms of the stable functioning of ecosystems.

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- How does the loss of biodiversity impact the resilience of ecosystems?

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### 49. Convention on Biological Diversity



During the UN conference on Environment and Development in 1992, agreements were reached in connection with global environmental problems such as global climate change or the protection of biodiversity. During the speech of a conservationist regarding the biological diversity convention, the following expressions were used:

- "nature and society",
- "conservation",
- "use",
- "benefits",
- "for future generations",
- "examination of environmental impacts",
- "minimising harmful impacts",
- "research, strategic plans and action programs".

- Write the speech of the expert by using these expressions.

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### 50. Overfishing

Types of overfishing:

1. "Ecosystem overfishing: we talk about this type when the population of a predator species is drastically reduced due to overfishing, which makes it possible for smaller species from the lower segments of the food chain to proliferate. Among others, this phenomenon can be observed during tuna overfishing. The overpopulated small fish population eats all the nutrients, which leads to further population destruction.
2. Recruitment overfishing: this occurs when the population is at a level where there are not enough mature, adult fish to procreate, as they fish these ones before maturity.
3. Growth overfishing: this occurs when the fish are harvested at a smaller size than the average that would produce the maximum yield. This produces a much smaller yield, and more young fish have to be harvested than if they fished completely matured ones."

- Why are certain types of overfishing dangerous?

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- Find out which are the largest fishing countries.

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- Describe the impact of this phenomenon on the functioning of aquatic ecosystems.

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- Do some research. What are the economic and social consequences of overfishing?

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- Make suggestions on reducing overfishing.

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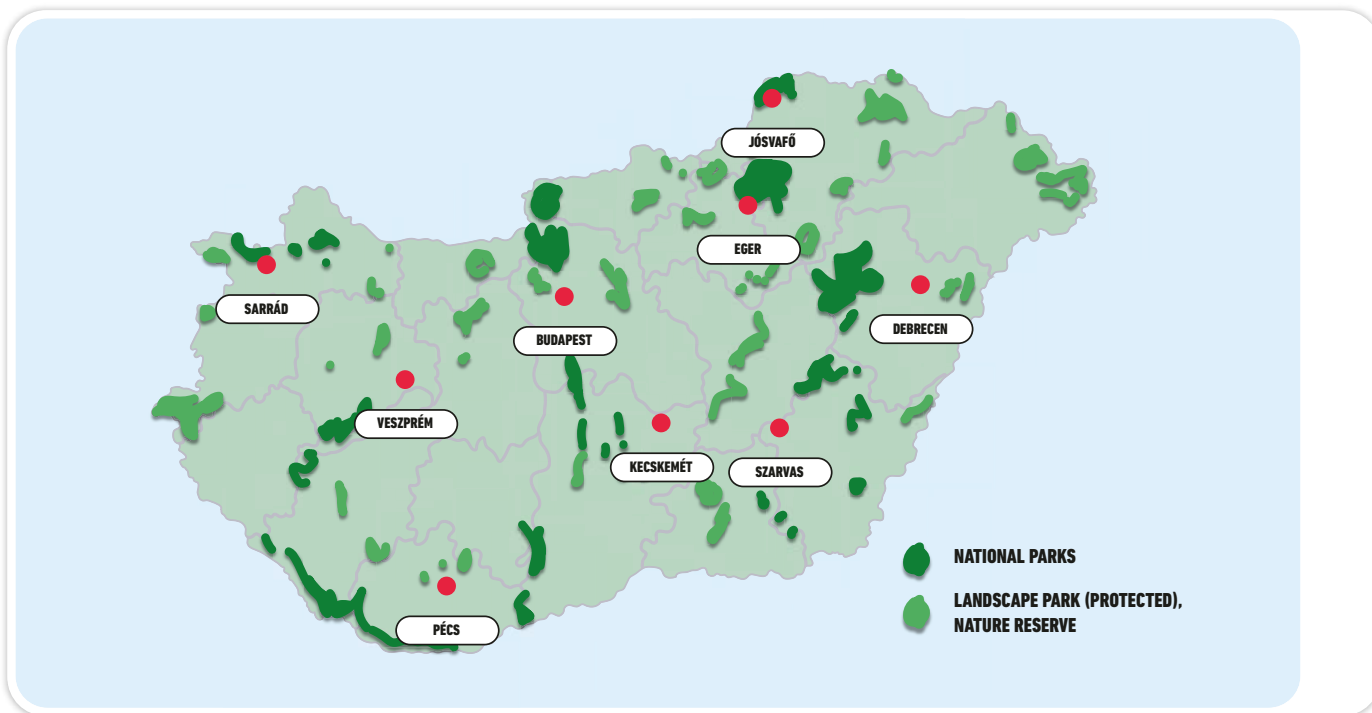
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### 51. Nature conservation at home

The following map shows the location of Hungary's national parks, landscape parks (protected areas) and nature reserves.



- Which national park centres are located in the following municipalities?

Szarvas \_\_\_\_\_

Sarród \_\_\_\_\_

Eger \_\_\_\_\_

Jósvafő \_\_\_\_\_

Veszprém \_\_\_\_\_

Kecskemét \_\_\_\_\_

- Which is the youngest national park in Hungary?

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### 52. Nature reserves in Hungary

The following table shows the size or area of Hungary's nature reserves between 1991 and 2019. Answer the questions after studying the table.

Name	Protected areas of national importance					Areas of local importance	Overall
	National parks	Landscape parks	Nature reserves	Natural monument	Total		
<b>Area, thousand hectares</b>							
1991	159,1	422,4	35,6	-	617,1	34,7	651,8
1995	177,7	466,7	26,6	-	671,0	33,0	704,0
2000	440,8	349,3	25,9	-	816,0	36,7	852,7
2005	486,0	324,0	28,9	-	839,0	39,4	878,4
2006	485,8	324,0	29,2	-	839,0	39,4	878,4
2007	485,9	326,7	32,1	-	844,7	39,4	884,2
2008	482,6	324,8	30,1	-	837,5	46,8	884,3
2009	482,6	334,5	29,4	-	846,5	46,6	893,1
2010	482,6	334,5	29,4	-	846,5	46,6	893,1
2011	482,6	334,5	29,4	-	846,5	45,7	892,2
2012	483,1	336,9	30,7	-	850,7	46,1	896,8
2013	480,7	336,9	30,6	-	848,2	46,4	894,6
2014	480,7	336,9	31,1	-	848,7	43,1	891,8
2015	480,7	336,9	31,1	0,1	848,8	41,5	890,2
2016	480,7	336,9	31,3	0,1	849,0	42,2	891,2
2017	480,7	336,9	31,4	0,1	849,1	42,7	891,8
2018	480,7	336,9	31,4	0,1	849,1	42,7	891,8
2019	480,7	336,9	31,4	0,1	849,1	42,1	891,2

- The area of Hungary is 9,303,000 hectares. Calculate the percentage of protected areas of national significance in 1991 and in 2019.
- Calculate how many times the ratio of national parks increased by 2019 compared to 1991.
- What could be the reason for the decrease in landscape parks and nature reserves?
- List the national parks that were established after 1991.
- Choose a national park, and list three results achieved in nature conservation, their mission, and events or programmes in the last 10 years.
- What options are there for ecotourism within the area of the chosen park?
- What visitor centres does the park have?
- What do you think is the purpose of visitor centres?
- Make suggestions. What kind of visitor centre could be established, and what kind of programme or event could be held in the area of the national park nearest to your home?

**53. Lake Balaton, the riviera**

Every year, the workers of the Balaton Limnological Research Institute assess the condition of Lake Balaton by taking different ecological attributes into consideration. They examine the water level and its impact on the biocenosis, the impacts of climate change, and they keep abreast of Mediterranean, alien species: the spread of algae, shells and fish. When collecting data they roam the lake with the institute's research boat, gathering water samples at different points, which later will be evaluated during analytical work. Today there are decades worth of data, which gives an opportunity to assess long-term changes. A small decrease in the water level can be observed at times as a result of climate change, so water level management is needed sometimes. In 2019, the average water level was around 120 cm, which is beneficial if we consider shore-bathing, sailing and the living world, but it poses a flood threat on the south shore. The immediate impact of climate change is the warming of the climate, which leads to the appearance of Mediterranean species in Lake Balaton.

But it is not only climate change that endangers indigenous species and the natural, local biocenosis, but human activities as well. In the 1920s, a Danubian barge was towed through the Sió channel, at the bottom of which there were 3 invertebrate stowaways. These were zebra mussels, which in almost 4 years proliferated throughout Lake Balaton. The transportation of sailboats, boats, windsurfing boards and other water vehicles between Europe's waters also helps alien species appear.

- What does "invasive species" mean?

- What characterises the change in Lake Balaton's water level based on data from previous decades?

- Collect data and make a graph about the change in the water level of Lake Balaton.

- How does climate change impact the water of Lake Balaton?

- How did zebra mussels get into the water of Lake Balaton?

- Why do ship owners have a great responsibility for the spread of alien species?

- Why is the appearance of alien species dangerous for the local biocenosis?

- As a worker of the Balaton-felvidéki National Park you have to create awareness-raising posters that will be put up at the harbours at Lake Balaton. The purpose of the posters is to draw the attention of Lake Balaton users to their role in disseminating alien species. Write advice for them that is easy to keep in order to prevent the dissemination of other species.

A poster is good if:

- it has an interesting and thought-provoking title,
- it is concise and communicates key information (discusses reasons and consequences),
- it contains bold illustrations and images,
- gives useful advice for prevention,
- it is colourful, spectacular.

**54. Protected birds in Hungary**

Figure out what protected birds the word search puzzle is hiding.

C	U	D	S	U	O	N	I	G	O	R	R	E	F
O	X	C	S	N	S	L	M	V	L	P	M	S	H
M	Q	O	L	R	D	G	L	U	R	Z	D	S	I
M	R	R	T	P	C	R	Q	I	W	W	X	Q	J
O	V	N	F	U	F	E	U	B	R	N	H	U	N
N	P	C	U	R	W	A	P	M	E	U	K	A	B
S	D	R	D	P	N	T	C	R	O	D	Q	C	A
P	B	A	P	L	I	B	O	T	A	C	X	C	I
O	F	K	G	E	D	U	E	L	D	W	C	O	D
O	F	E	R	H	L	S	J	N	A	F	R	H	M
N	C	J	Z	E	G	T	W	F	O	T	X	E	G
B	Z	P	C	R	O	A	J	R	L	T	U	R	X
I	C	M	Y	O	X	R	Z	F	D	R	W	O	O
L	P	E	D	N	T	D	C	K	T	Q	S	N	U
L	N	O	R	E	H	T	H	G	I	N	V	U	X

- The answers include a coat-of-arms animal of a Hungarian national park. Which bird is it?

- Which national park's coat of arms is it?

- Look up the protected plants and animals you can encounter in the territory of the park. List 5 species of each.

PROTECTED PLANTS IN THE PARK

PROTECTED ANIMALS IN THE PARK

- Another bird among the answers was Bird of the Year in 2016 in the programme curated by the Hungarian Ornithological and Nature Conservation Society (MME). Which bird is it?



Its population is currently fluctuating in Hungary. The reason for their declining population, among others, is the shrinking of their habitat, increasing periods with low rainfall, and intensive agricultural activities.

Thanks to the work of conservationists, however, the bird is "singing again" in the Kesznyéten Landscape Park. Look up what tools and activities helped to grow the population.

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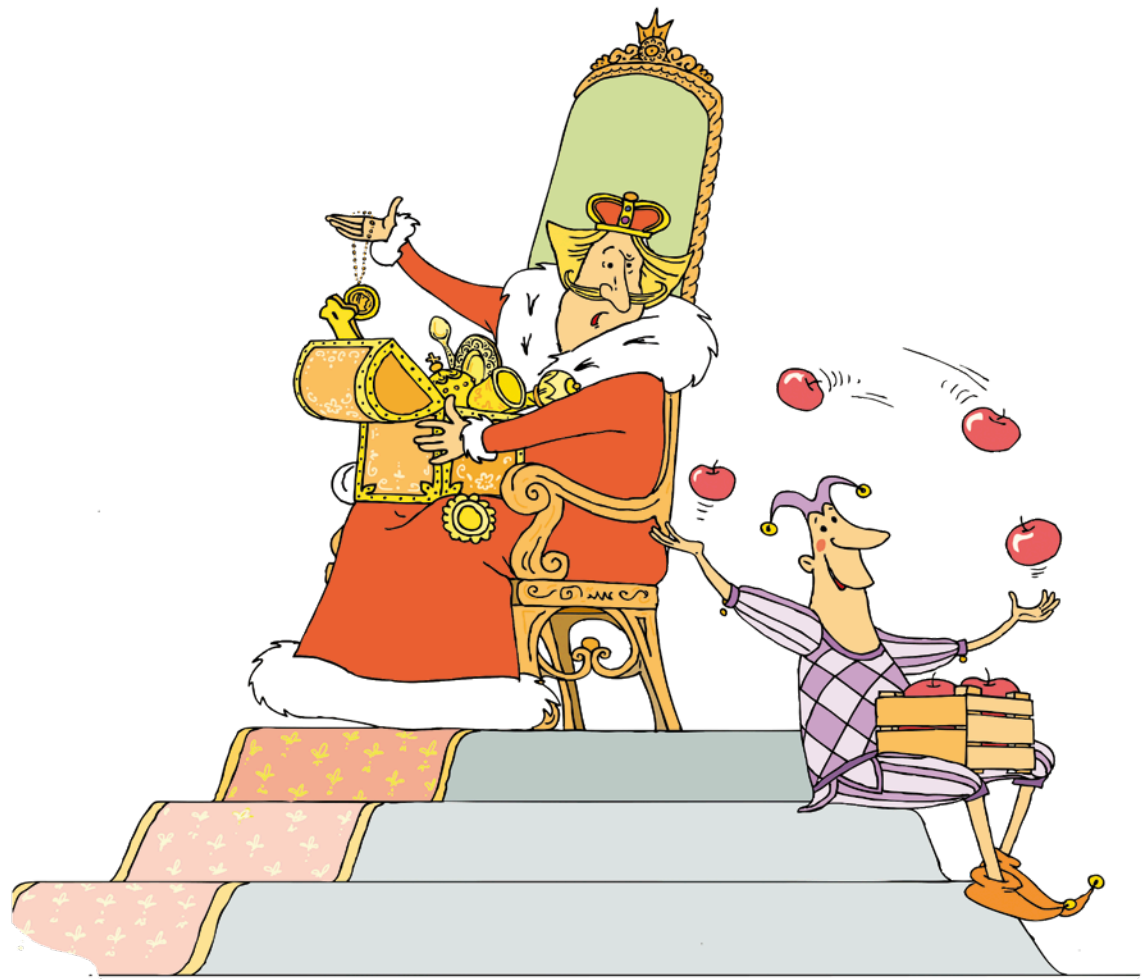
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# ECONOMY AND SUSTAINABILITY



## 1. Can the interests of economic operators conflict with sustainability considerations?

- Read the following cases and describe who the stakeholders could be.
- Name the interests stakeholders may have.
- Find solutions for managing the conflicts of interest.

a) *A landfill? Anywhere but here!*

A regional waste treatment company is planning to establish a landfill in a municipality near a city, as there is no such service in the region. People would be able hand over their hazardous waste (e.g. pesticides, fluorescent tubes, paints, batteries, battery packs, etc.) and non-hazardous waste (e.g. construction debris, glass, etc.).

Residents of the municipality strongly oppose this. They are mostly afraid of the storage of hazardous waste in large quantities, and the increased traffic.

The landfill is expected to provide work for 10 people. The enterprise operating the landfill will pay local business tax to the local government, and undertakes to maintain the road leading to it.



Aerial image of an urban landfill

Groups affected by the investment	Group's interest in the investment	What can they do to assert their interests?



Suggestion on how to manage the conflict of interest:

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b) *Isn't it too much to support pollinating insects?*

In an agricultural area where large-scale cultivation is carried out, there is little nutrition for insects searching for pollen and nectar once the cultivated crops lose their flowers. Ecologists suggest that farmers should establish protective flower strips, because this way they can provide food sources, overwintering and sanctuary sites for pollinating insects.

The research institute helps by making flower seed mixes for crop fields for farmers, and provides training and information for them. Yet smaller parcels must be established to create the flower strips, so large-scale farming methods are less applicable, but there are grants accessible for a few years to introduce this method. In addition to this, the higher number of natural pollinating insects facilitates cultivation in the long term.



Alternating arable land and flowery fields

Groups affected by establishment of protective strip	Group's interest in establishment of protective strip	What can they do to assert their interests?

Suggestion on how to manage the conflict of interest:

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**2. How can economic interests be compatible with sustainability, from logs to furniture?**

A furniture manufacturing company deals with all work processes from wood processing to furniture assembly.

- Complete the table and show how and why the interests of the enterprise may deviate from aspects of sustainability?
- Find a solution for how to harmonise economic interests and sustainability.



A furniture manufacturing company

The company's interests	Its sustainability aspects	Proposed solution
Logging should be a low-cost activity.		
Primarily use unskilled labour for furniture assembly because it has lower wage costs.		

### 3. Is it worth increasing production?

A business producing leather goods (bags, clothes) receives an offer to buy a new, high-performance sewing machine from a manufacturer.



Mechanised leather cutting

If they buy it, and use it for production, they may be able to produce a lot more goods per day, so their revenue would increase significantly. As the machine complies with the latest regulations, production would be less noisy and use of raw materials would fall, but instead of the 10 workers employed so far they would only need 4, because the machine does not require as much preparatory work. They would be unable to keep the other 6 employees in the plant, but the greater revenue would allow for a significant pay rise for the remaining employees, and the profit of the company would also increase. They could pay more in taxes to the local government and the central budget too. Last but not least, they currently lack enough money for the investment, so they would need to take out a bank loan.

- Describe the interests of the listed stakeholders.

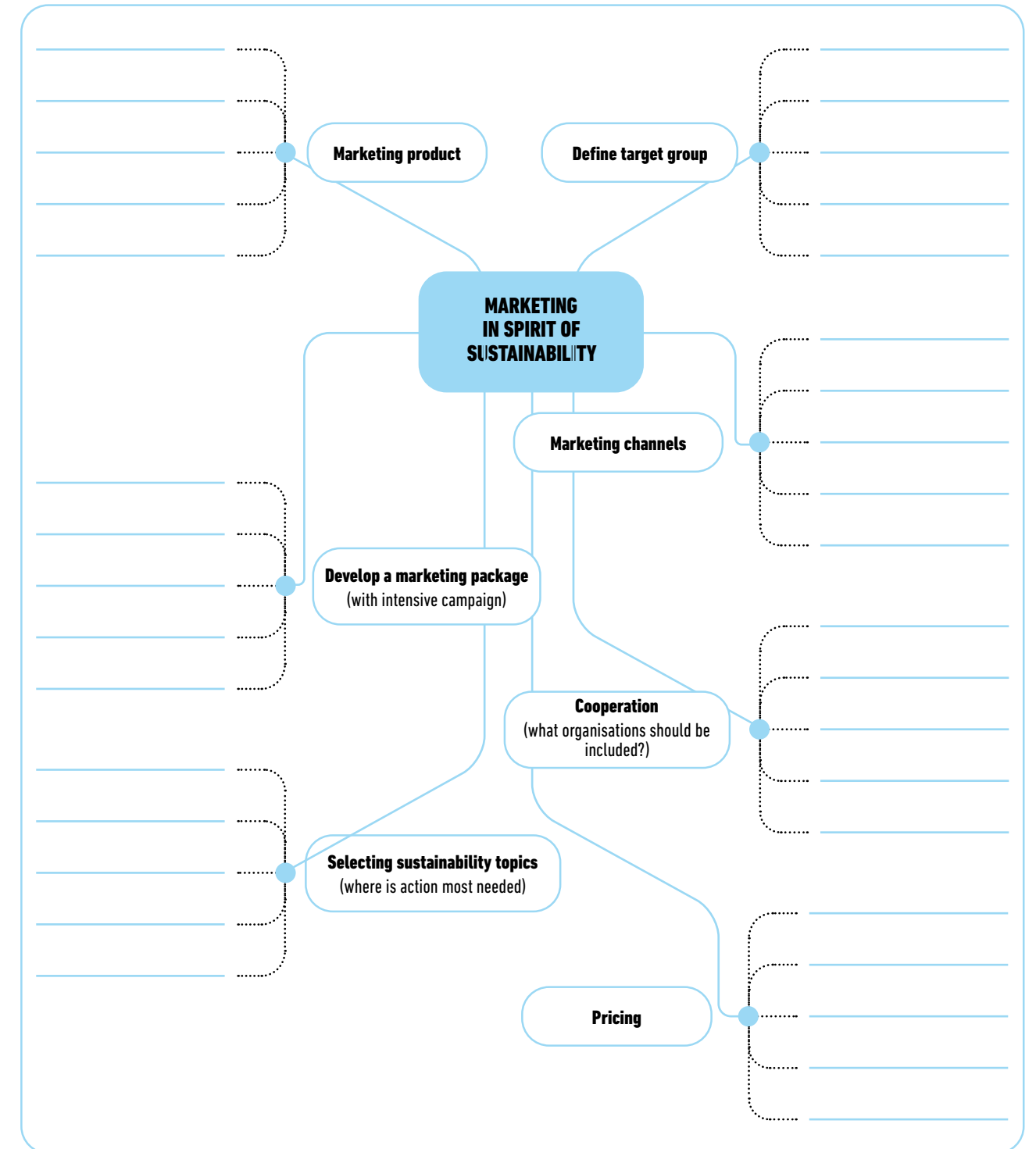
Stakeholders	Stakeholder interests
Company owner	
An employee who thinks they will be laid off	
An employee who heard they will stay	
A local government representative	
A representative of the bank	

- Organise a debate about the topic and be an advocate of the role allocated to you, make your arguments.

### 4. Put the tools of marketing at the service of sustainability.

Marketing is an activity whereby a business carries out market analysis, product development, product promotion, pricing, sales and sales promotion to meet the needs of customers.

- With the help of a mind map, explain how the tools of marketing could be used for social purposes, to establish and spread a sustainable development approach.



- In a presentation, describe how you would build up the marketing campaign of a product or service you deem important by applying the sustainability approach.

## 5. Sustainable development goals, serving our future

At the UN summit in September 2015, world leaders laid down the framework for sustainable development until 2030. They set out 17 sustainable development goals unanimously accepted by 193 countries, thereby ensuring the future of our entire planet as a whole and the billions of people on it.

- Split into small groups.
- Add the UN sustainable development goals to the table.

1.	10.
2.	11.
3.	12.
4.	13.
5.	14.
6.	15.
7.	16.
8.	17.
9.	

- How could you group them? Find ways to group them. Mark the goals on this basis.

## 7. Let's balance the pros and cons.



Balancing

In connection with securing sustainable development, a developed economy conducted a risk analysis that is contained in the following table.

- Even a country with a developed economy has problems. You can see these in the following table. Think them through and discuss how to manage the given risks. Jot down some notes in the last column of the table.
- Describe what state leaders can do to minimise the negative impact of the given risk factor and ensure sustainable development in the long run.

Type of risk	Risk factor	Risk management strategy
<b>Poverty</b>	Despite the developed state of the country, certain parts are characterised by regional poverty, primarily due to the scarcity of job opportunities.	
<b>Gender equality</b>	The number of family-friendly workplaces is very low, which makes it difficult for mothers to return to the labour market after giving birth.	
<b>Affordable and clean energy</b>	Most of the country's energy use is based on nuclear energy and imported gas. Some residents object to use of nuclear energy because they think it pollutes, yet gas imports can lead to economic dependency.	
<b>Industry, innovation and infrastructure</b>	Given the developed state of the country, its innovations are pioneering, but ideas of sustainable industrialisation do not emerge in every area.	
<b>Responsible consumption and production</b>	Natural resources are scarce, so it is important to switch production to a circular system, but consumer preferences do not yet support this.	
<b>Decent work and economic growth</b>	For long-term, comprehensive growth and cost-efficiency, widespread employment and ensuring decent working conditions and livelihoods for individuals are neglected.	

8.

### Do you run a risk if you don't take out insurance?

An apricot-producing area was struck by a serious hailstorm, and practically all the fruit was destroyed. Farmers could expect no income from the apricots that year, what is more, some of the trees had to be replanted.

Discuss the following statements with your classmates.

- Compensation should be paid to those who previously paid insurance premiums, since that is the reason they paid out the large sums. It would not be fair if the state paid compensation to those who did not have insurance. Anyone who did not undertake the extra cost knew the risk they were taking, and now they should accept this.
- As a result of the hail, a lot of people lost their only source of income. It is the responsibility of the state to help anyone in need in such cases. Those who could not pay the insurance premium also have to make ends meet. This is social solidarity.

- Explain which solution you would suggest!

Blank lines for writing an answer to the previous question.

9. Complete the following sentences with the phrases from the list to make them true.

a sustainable strategy, recycled materials, recycling, beyond the company, production processes, sustainability, emissions, informed decisions, scarce natural resources, environmental investments, compete, richer, responsibility, considering, ecological footprint, business policy goals

Many people think that the \_\_\_\_\_ a country is, the more it takes \_\_\_\_\_ into account in its policies and decision-making, while the more economically developed countries have a larger \_\_\_\_\_: their citizens consume more, travel more, use more energy, and therefore the \_\_\_\_\_ of developed countries increases accordingly.

A business is successful, if – for the sake of making \_\_\_\_\_ – its leaders monitor survey and measurement results and trends that extend \_\_\_\_\_, analyse available information when \_\_\_\_\_ whether to use \_\_\_\_\_ or implement \_\_\_\_\_.

Companies that develop \_\_\_\_\_ and which set \_\_\_\_\_ that reduce their \_\_\_\_\_, ensure the \_\_\_\_\_ of their products, streamline their \_\_\_\_\_ and demonstrate sustainable use of \_\_\_\_\_ will be able to \_\_\_\_\_ in the long term.

10. Decide if the following statement is true or false. Circle the correct answer.

One of the most commonly used indicators of economic development in a given society is its gross domestic product (GDP) per capita, which comprehensively describes the social and environmental sustainability of a country.

- a) True b) False

- Give reasons for your choice.

Blank lines for writing reasons for the choice.

11. List the areas examined when the sustainability index of a given country is defined.

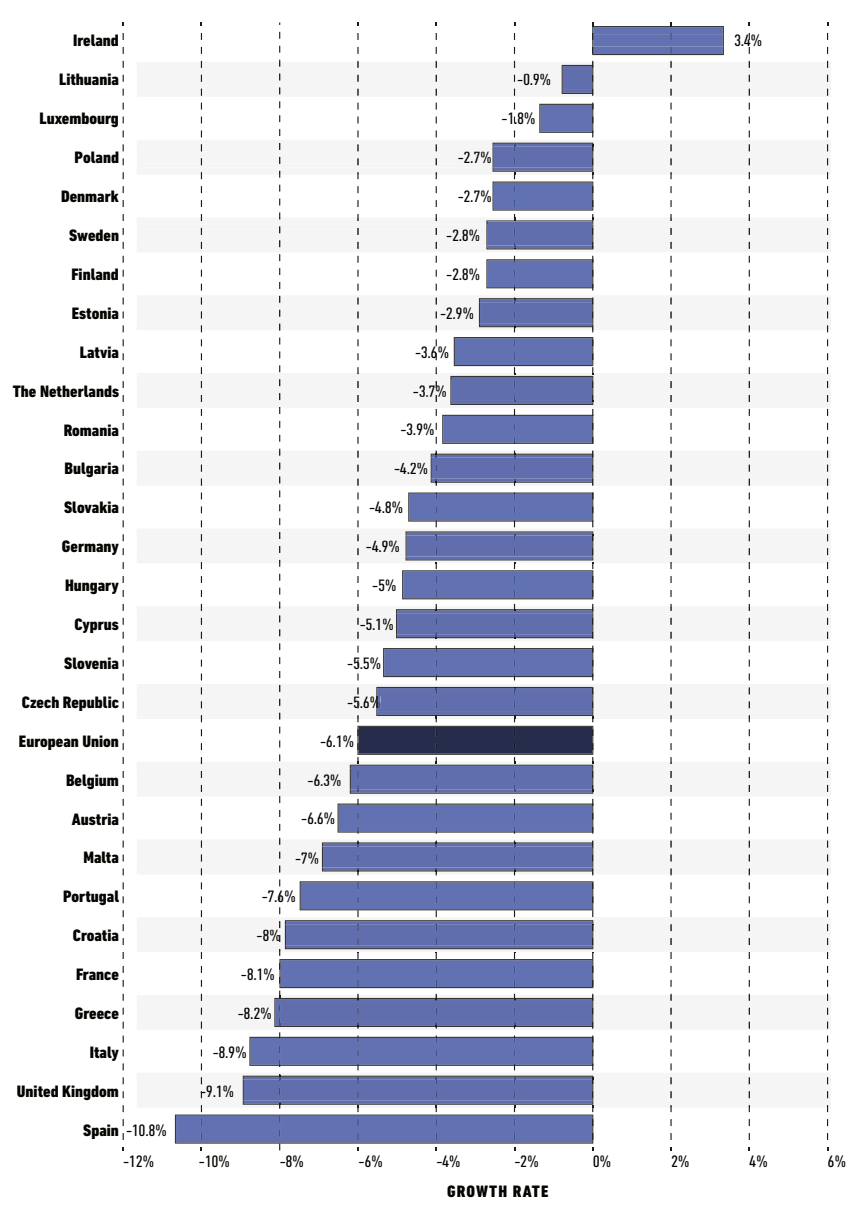
- a) \_\_\_\_\_ b) \_\_\_\_\_ c) \_\_\_\_\_ d) \_\_\_\_\_

12. What information does the data of the Central Statistical Office reveal?

Search the https://www.ksh.hu/nemzeti-szamlak-gdp website where you can find the current data on the economic performance of Hungary. Compare the data of the last three years.

13. How did GDP in Europe change in 2020?

The following diagram shows the growth rate of annual GDP in selected European countries in 2020. Summarise what the reason for the significant fall could be.



14. Group the following economic factors based on whether they have a positive or negative impact on the quality of the environment. Any given factor can end up in several groups. Discuss why the individual factors belong to the groups you place them in.



recycling, separate waste collection, linear economy, circular product management, globalisation, profit-oriented production, scarcity of natural resources, poorly trained social resources, low GDP, high GDP, high emissions, energy developments, state involvement, corporate social responsibility

From a sustainable development perspective:

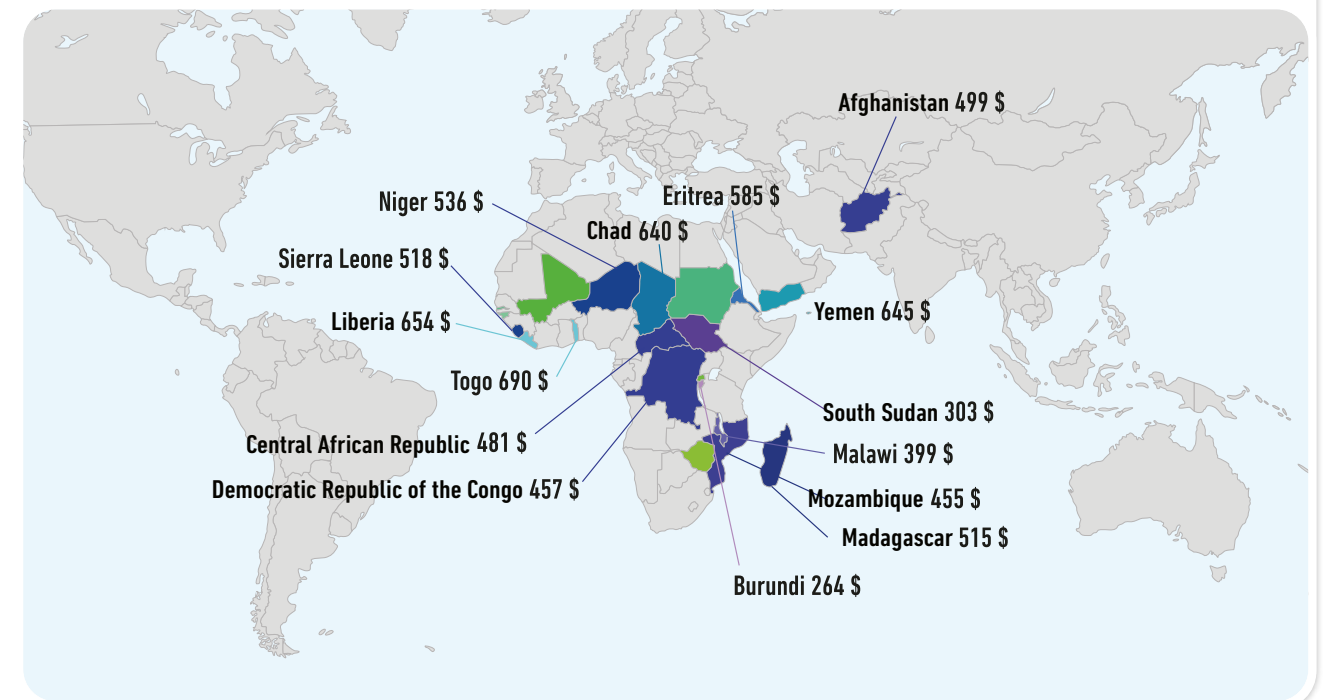
economic factors with a positive impact	economic factors with a negative impact

15. GDP in the world

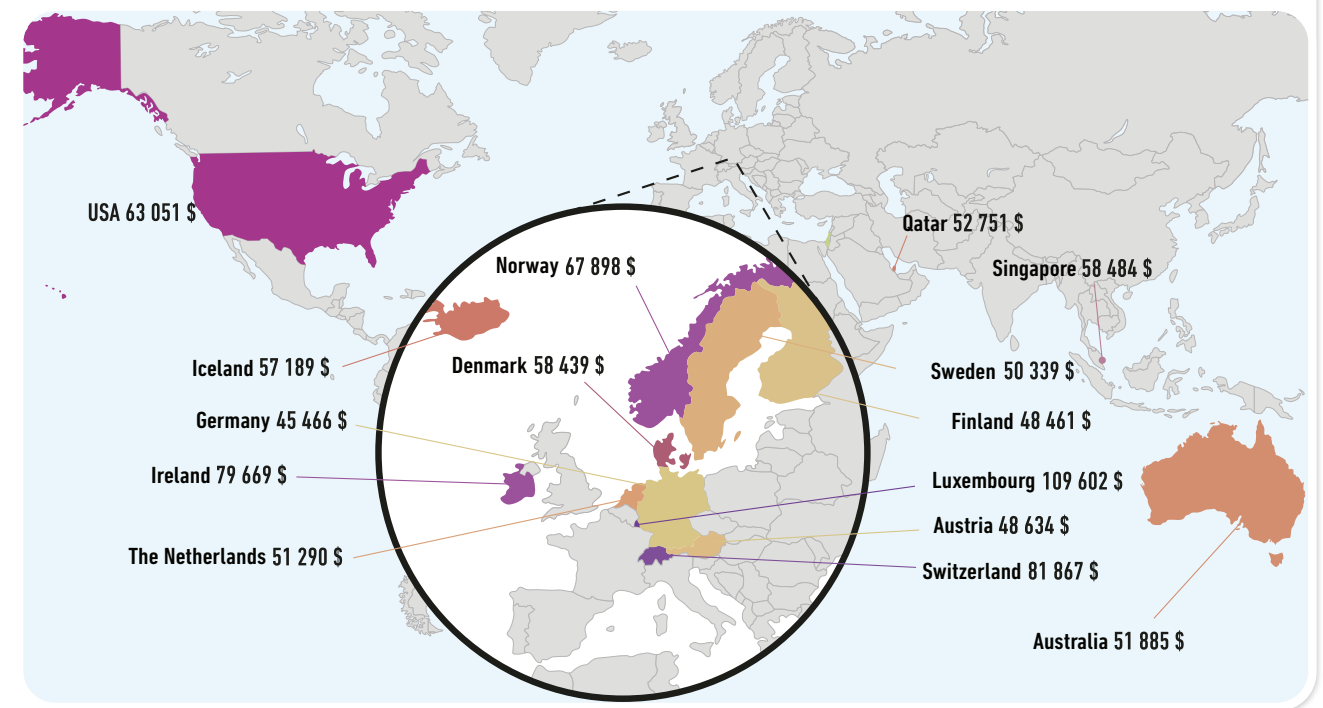
The following two charts show 15 countries with the lowest and 15 countries with the highest GDP in 2020.

- Choose a country with a high and one with a low GDP per capita.
- Find examples on the internet regarding the two countries which, in your opinion, demonstrate that economic development and environmental impact correlate.
- Based on the data, formulate your conclusions.

THE WORLD'S 15 POOREST COUNTRIES ACCORDING TO PER CAPITA GDP, 2020



THE WORLD'S 15 WEALTHIEST COUNTRIES ACCORDING TO PER CAPITA GDP, 2020



**16. No herring, no wedding! – goes the Scottish proverb.**

Read the following excerpt from Implementing Regulation (EU) 793/2013 of the European Commission

“The stock of Atlanto-Scandian herring (also referred to as Norwegian spring-spawning herring) is the largest herring stock of the world. It produced catches of the order of 1 million to 2 million tonnes. However, heavy exploitation due to overfishing led the stock to collapse and to the cessation of all fisheries for more than two decades between the early 1970s and the mid 1990s, with very severe consequences for the fleets that exploited that stock.

(2) The stock of Atlanto-Scandian herring was managed, since the recovery of the stock and the re-opening of the fishery in 1996, following consultations among the five parties whose economic exclusive zone (EEZ) is visited by this fish during its migration cycle: the Russian Federation, Norway, the Faeroe Islands, Iceland and the European Union (hereinafter ‘the coastal States’).”

Based on the text, answer the questions.

- Which fish species does the regulation protect?

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- In which period was this fish not subject to fishing?

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- What was the reason for the collapse of the fish stock?

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- When did fishing begin again?

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- Which countries are responsible for protecting the fish species?

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**17. Norwegian herring fishing**

In Norway, the industry built on herring fishing collapsed during the 1960-70s.

- Do your research, and write down what measures the state of Norway took to solve the situation?

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- Draw conclusions based on the Norwegian case.

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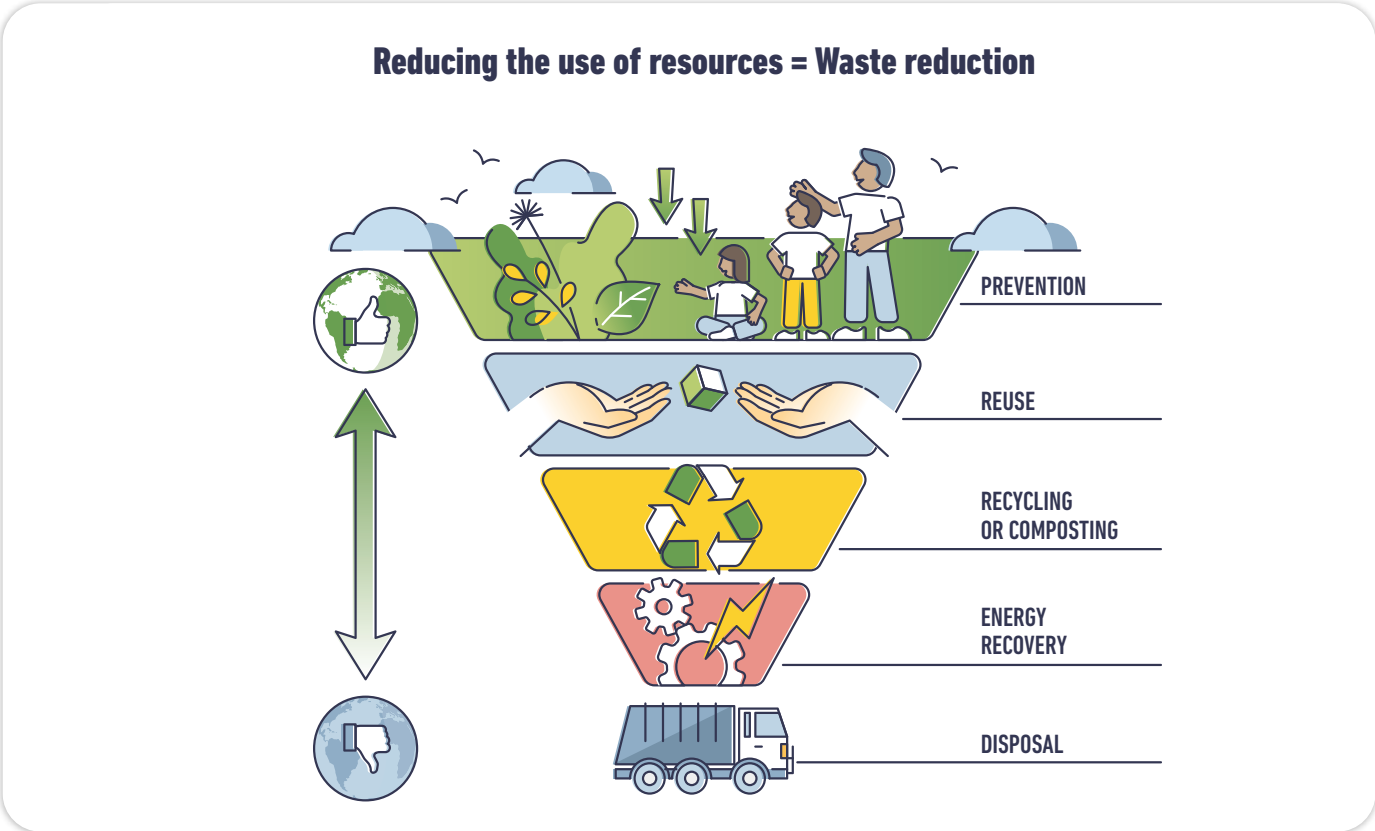


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- Prepare a presentation and demonstrate how the structure of the Norwegian industry has changed since the collapse.

**18. Levels of the waste pyramid**

Regulations on waste management are set forth in the laws of the European Union and in Member States. The waste pyramid shown in the following image depicting the levels of waste reduction and management, from the most favourable to the least favourable solutions, is one of the key pillars.



- Choose a country with a developing economy and a lagging country.
- Compare whether the objectives of the waste pyramid levels are met in the given countries, and what could limit them.
- Draw up suggestions, what steps can the states take to reach higher levels of the waste pyramid.

Levels of the waste pyramid	Economically developed countries	Economically backward countries
Waste prevention		
Reuse		
Recycle		
Energy recovery (incineration)		
Disposal (landfilling)		

**19. Watch out, there's a new approach coming...**



Hasitány is a (fictitious) Hungarian town, whose citizens are highly educated and of a progressive mindset. The leaders of the economically developed town would like to take further steps to foster their sustainability. You have been asked to collect possibilities for intervention that could help, even in the short term, to achieve a change in society's mentality.

Using the topics set out in the table below, outline measures which you think are reasonable in an economically developed society, and argue for their feasibility.

Promoting changing social attitudes		
Area	Intervention proposal	Reasoning
Energy management		
Waste collection		
Responsible consumption		
Employment		
Equal opportunities		
Water consumption		
Municipal infrastructure		
Vehicle use		

**20. Linear, or circular? Is that even a question?**

From the perspective of sustainable development, the circular economic model has several benefits compared to the linear economic model.



Group the characteristics according to whether they belong to the linear or circular economic model. Write the number of the given characteristic in the right group.

1. Amount of used resources decreases.
2. Supply market uncertainty is common.
3. Environmental impact reduced to minimum.
4. Disregard for scarcity of resources.
5. Strives to preserve used production factors for longest time possible.
6. "Make more from less, and more efficiently" approach.
7. Depletion of natural resources.
8. Aims to minimise waste production.

9. Used production factors are completely lost by the end of use.
10. Even no waste can be generated.
11. Does not manage the amount of waste generated.
12. Uncertainty of procuring raw materials leads to price hikes.
13. Pillars: extraction, production, consumption, disposal.
14. Fall in emissions.
15. Recycling takes place at most points of the production chain.
16. Products are treated as waste at the end of their useful life.

**LINEAR MANAGEMENT**

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**CIRCULAR PRODUCT MANAGEMENT**

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- Name the areas where it is necessary to intervene into linear economic processes to ensure sustainable development in the long run.

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**21. Match the circular economy characteristics with their benefits.**

1.	Implementing new material management and business model.
2.	Conscious design
3.	Identifying substances that are harmful to health and environment.
4.	Reducing the use of primary raw materials, facilitating the use of secondary raw materials.
5.	Promoting innovation, environmentally friendly technology, repair and maintenance
6.	Encouraging and supporting new consumer attitudes and behaviour
7.	Extended product liability

a)	Increased production of environmentally friendly goods. Increase in useful life of products. Preserving the resources invested in products for as long as possible
b)	Demand for resources is reduced, allowing businesses to remain profitable
c)	Waste is reduced or eliminated. Reduction in wasted resources.
d)	The aim is not to acquire property. The product remains the property of the manufacturer and is rented or leased by the user.
e)	Reducing, then eliminating emissions and materials that cannot be recycled into the economy
f)	Manufacturers are becoming more interested in producing products that can be used for longer, taking back end-of-life products and recycling them.
g)	Protecting natural systems Promoting regeneration

**22. Iconic items of clothing and bustling fashion\***

The textile industry is the second most polluting sector after oil, and it is responsible for one tenth of carbon-dioxide emissions throughout the world. Today, we buy four times as many clothes as we did three decades ago. According to research conducted among women, the majority of clothes are only worn seven times before they are thrown away. Textile companies are flooding the market with cheap clothes in larger quantities than before, but with small series collections. Consumers are afraid to miss out on the trends, so they try to shop quickly. As we learn more and more about the damage the textile industry causes, the pressure builds on manufacturers as well; numerous innovative solutions applying the tools of the circular economy have appeared on the market.

The textile industry has started out down the road of the circular economy. The following solutions appear throughout the production and supply chain:

- they extend into new, "greener" production processes,
- they have an impact on consumer preferences and behaviour through the companies' marketing strategies,
- they have an impact on waste management.

Match the three corporate initiatives below with the three solutions above.

a) From shoes to the sports pitch



A well-known shoe manufacturer and distributor launched an initiative in which used sports shoes are collected all around the world.

The shoes collected are then shredded, and the pieces are sorted based on material type in a special process to turn them into material for surfacing sports pitches with. We have a number of innovative partners; thanks to our joint research and development they can almost completely recycle the shoes so that up to eight different types of surface can be created from them, from running tracks through basketball courts to baseball fields. Since the beginning of the program, 28 million pairs of shoes have been "reincarnated" into sports pitches.

Within the production and supply chain, this initiative is part of \_\_\_\_\_.

After reading the news, many people argued that while pleasing, the solution is still not completely environmentally friendly. What concerns could they have formulated?

b) Pineapple clothes



A textile manufacturing company produces pressed textiles from pineapple fibre adding a corn-based polymer, a PLS that can be composted under industrial conditions. Pineapple leaves are the by-product of pineapple harvesting, tonnes of which used to be burned.

The business model is favourable for pineapple growers because they gain extra income, and also for designers because they can be creative from a new, innovative and sustainable material.

Within the production and supply chain, this initiative is part of \_\_\_\_\_.

c) The pleasure of fewer clothes



Since 1996, the amount of clothes purchased in the European Union per person has grown by 40%. European people buy nearly 26 kg of textile products a year, and throw away around 11 kg. Second-hand clothes can be exported outside the EU, but the majority (87%) is burnt, or dumped in landfills. All over the world, less than 1% of clothes are reused as clothing, partly due to the inadequacy of technology.

There are numerous social media campaigns and applications in which users can take a photo of their used/worn items and sell them or donate them to someone else. It is good, for example, if such sites show the items near to us, or can link to online second-hand stores or organisations dealing with the transport and forwarding of donations. These initiatives can work as campaigns by ordinary citizens or non-profit organisations, but also as ethical enterprises.

Within the production and supply chain, this initiative is part of \_\_\_\_\_.



**23. What about your own clothes?**



Check your wardrobe! Do you have anything that you don't wear and have no need for any more? List the things you could do with your superfluous clothes.

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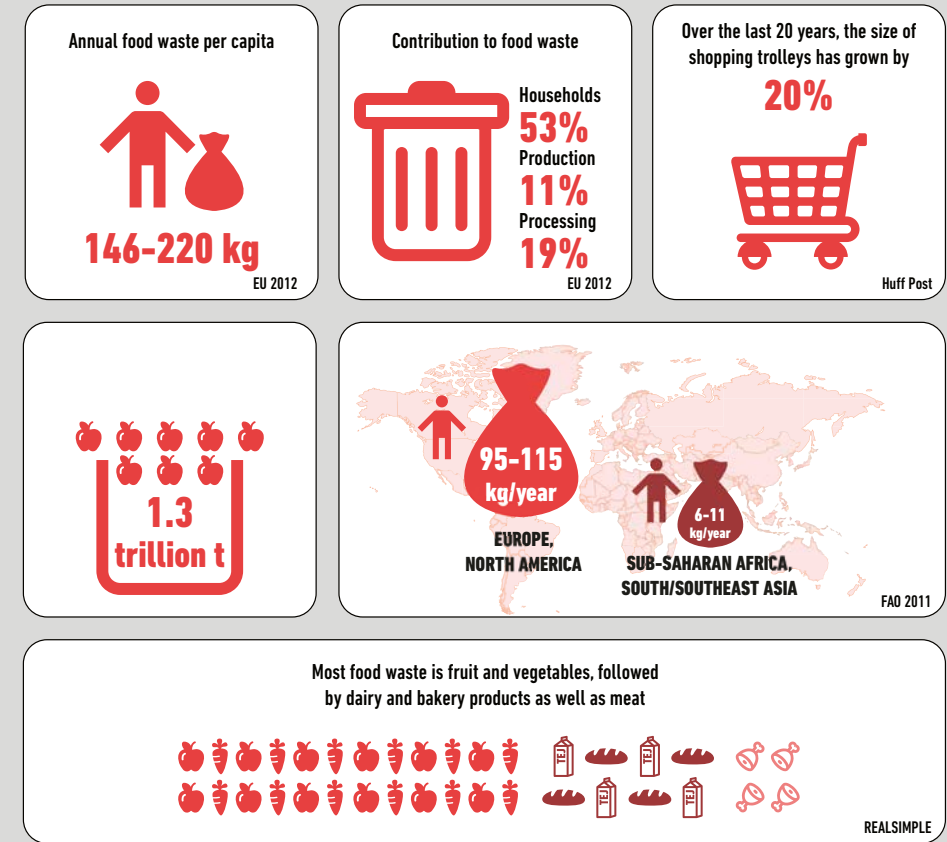
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**24. Compile some arguments as to why you should set priorities during waste management under a sustainability agenda?**

- Write down the steps of sustainable waste management, starting with the most important.
- Write an example of a waste management activity that is typical at each level.

**25. Enterprises against waste\***

At least one third of the food for human consumption – or half according to some analyses – end up in the bin, while 800 million people are starving on the planet. Estimates put annual food waste per person in the EU at 146-200 kg, the majority of which (53%) is generated in households, and 30% during manufacturing processes.



Companies also try to launch good initiatives to prevent waste. Here are some examples:

- The first Danish supermarket selling goods that for some reason are not suitable for sale in other stores was opened in Copenhagen in 2016. The products can have damaged packaging, or expired best before dates (which is not the same as the expiry date, but the end of the period ensuring the highest quality for the product). This shop sets prices at 30-50% discounts compared to their original retail price. The supermarket receives these goods as donations, and any revenue generated is used for charitable causes, mostly to reduce hunger and food waste.
  - The coffee shop chain which can now be found in several European and even Australian cities, and where meals are made from expired goods by well-known chefs, started out in the United Kingdom. They claim their food is of outstanding quality, they violate no laws, and they would only like to question the grey areas of the regulations. One fun fact is that the food in the coffee shop is not priced, guests pay as much as they want.
- Look for initiatives in your country to reduce food waste. List them!

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- Would you like to go shopping in these shops? Give reasons for your choice.

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- What can you do? Observe and note down how much food your family throws away in a week. Why was the given food thrown away? What could you have done to avoid throwing it out?

Food	Reason for throwing it away?	What could have been done?
3 rolls	went stale	<ul style="list-style-type: none"> <li>- shop more carefully</li> <li>- use the stale rolls to make breadcrumbs</li> <li>- heat them up in the oven</li> </ul>

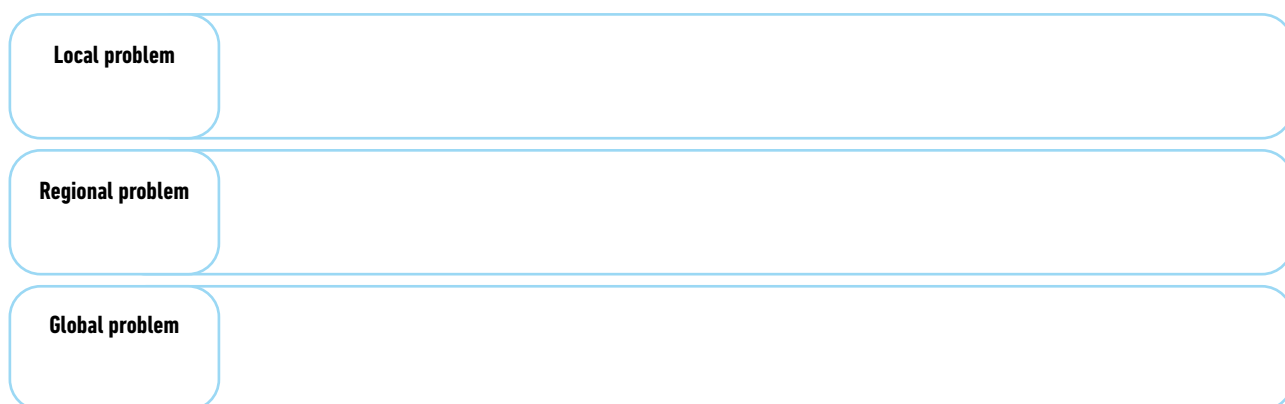
## 26. Correlations between sustainability issues and solutions

In one of the articles you can read about sustainability problems in towns and cities, while another talks about the good sustainability practices of a region.

- Look into it and discuss what the following phrases mean: interaction, creativity, innovation, catalyst, segregation.
- Summarise and add into the charts following the articles what impact local problems and good practices have on regional and global processes.

### a) Our cities

"Towns and cities are spatial concentrations of human activities and interactions. They are the engines of the European economy, they provide jobs and services, and they serve as the catalysts of creativity and innovation within the whole European Union. Around 70% of the EU population live in urban areas, which provide more than two thirds of the EU's GDP. However, towns and cities are also characteristically the places where long-term problems – such as unemployment, segregation and poverty – crop up the most, and they are under heavy pressure in terms of environmental protection too. So political decisions related to urban areas are of great significance for the entire European Union."\*



### b) Sustainability in Austria: relaxing with a calm conscience

"A significant yearning for clear waters, lush green forests, an untouched natural environment, cultural landscapes shaped by man, as well as diverse flora and fauna. In Austria, desires for pure nature can come true. The country does a lot to preserve this special value and quality. Sustainable products and services play a key role in this together with the various technologies, social and cultural aspects. The goal is to make Austria both an appealing and a sustainable place for the locals, tourists and hospitality companies. The following three visions can be found in the centre of the ambitions.

#### Technology

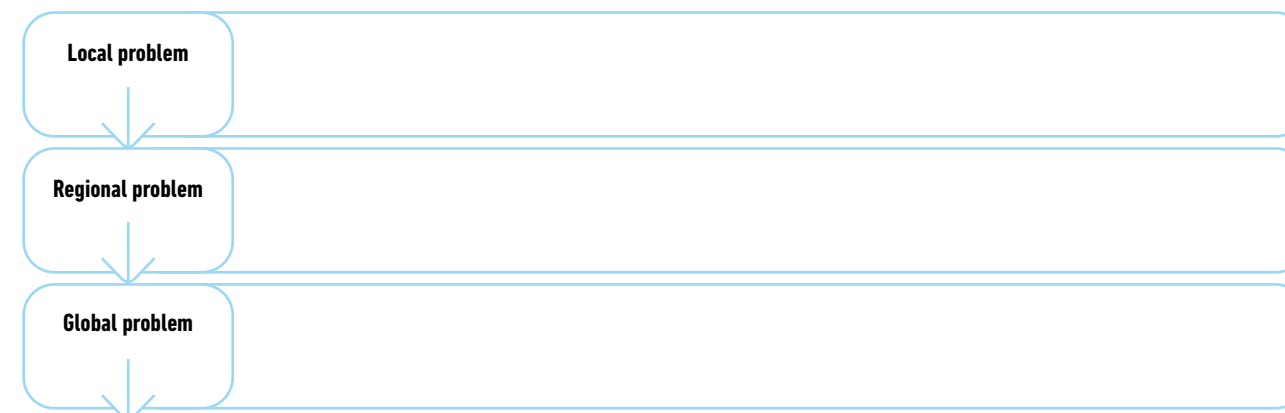
Smart technology for a clean environment: zero emissions, environmentally friendly mobility primarily using public transport and environmentally friendly energy – these are the tools facilitating the achievement of a future-proof balance in terms of greenhouse gas emissions in Austria. State-of-the-art technologies are being introduced to this end.

#### Regionality

Tangible assets must be protected and safeguarded, just as much as intangible heritage. Preserving traditions makes a significant contribution to sustainability. Regional artisan workshops represent significant value in Austria, and often form part of tourism offerings. This means old and forgotten artisan techniques can come back to life, which constitute a new kind of inspiration for holidaymakers.

#### Eco-conscious hospitality

Holidays are made truly special if you feel your hosts are delighted to welcome you, hosts who really know and love their region, and do everything for your comfort.\*\*



## 27. The externalities of sustainability

- List some examples of initiatives implemented for sustainable development.
- Examine what positive and negative externalities may emerge during their implementation.

Area of sustainable development	Positive externality	Negative externality
Use of geothermal energy		
Use of electric cars		

**28. Community transport from any point in Budapest\***

GreenGo is a Hungarian application that registered users can use to quickly search for the nearest available GreenGo car, which they can then use for a fee per minute. The enterprise is based on community sharing, which aims to maximise the use of given vehicles, in this case cars.

The service offers a solution for adverse environmental impacts and the lack of parking spaces. The cars are electric, GreenGo services them, and clients don't even have to charge them. The company had a very simple solution for quality assurance: users can check the internal and external condition of the cars themselves.

The vehicle can be started once the driver has assessed its condition. If the driver assesses the car without really examining it, and the next driver finds some damage, the previous driver is responsible. This form of community transport not only targets private individuals, but offers solutions for companies too.

Their key aim is to conclude contracts with large companies, thereby increasing their current clientele. They started with 45 electric cars, but the aim is to cover three times the current area of Budapest (inner districts), and to supply around 300-500 vehicles.

Answer the questions based on the text.

- What is GreenGo?

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- How do you pay for using it?

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- What are the vehicles powered by?

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- Who checks whether a vehicle has any problems?

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- Summarise how this type of vehicle use protects the environment?

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- How do you see it? Could this solution also be applied in cities other than Budapest? Find out whether there are GreenGo services in other towns and cities, and how popular they are.

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- Visit the company's website and summarise how the various services foster sustainability?

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**29. What can public administration do to ensure that business operations and citizens' behaviour promote sustainability? Study the relevant chapter of the textbook before doing the exercise.**

- In the first column of the following table, collect enforcement tools that a state can use to prompt an attitude change in society towards being more environmentally conscious.
- In the second column of the table, collect proposals for measures which a state could use to motivate environmentally conscious social responsibility in economic actors.

Intervention tools for states	
Enforcement tools for states	Motivational tools for states

- Explain the difference between enforcement and motivation.

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- Argue for the one you find more effective, and give reasons why.

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**30. Can a meter be intelligent?**



Smart meter

A smart meter is a tool used to measure consumption of various utilities, enabling the consumer as well as the service provider to monitor consumption. Smart meters are also called intelligent meters. They operate the same way as a regular consumption meter, but provide further useful information.

The meter display shows how much energy was used or, in the case of electric energy, fed back into the system by the consumer. The device can communicate remotely, so there is no need for a designated person to read the meter.

- Read the following statements and write down what benefits the given statement can bring.

Statement	Resultant benefit
From the data thus collected, the service provider can prepare more accurate analyses about consumer habits.	
Tariff types are defined based on time zones.	
They make it easier to identify thefts and system failures.	

- Summarise to what extent consumers and service providers benefit from smart meters.

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- What environmental impact may use of these device have?

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- Check if there is a way to use such a smart device where you live.

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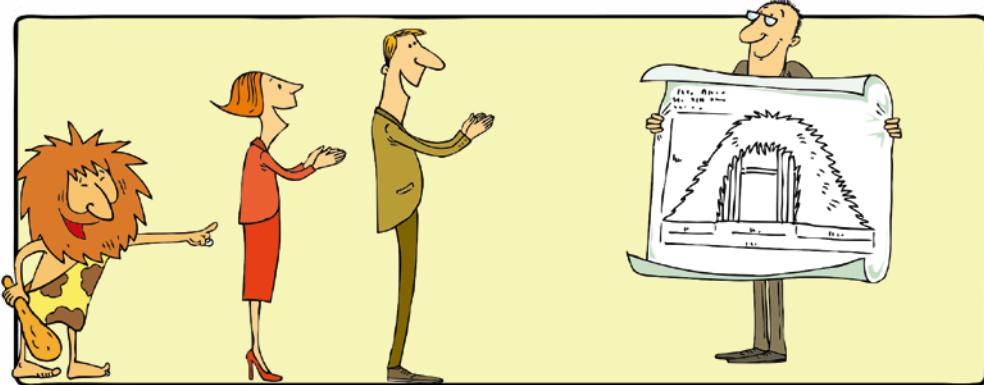
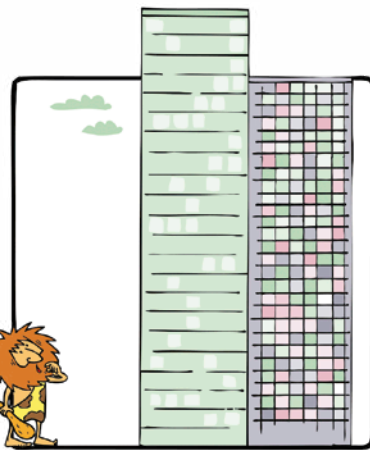
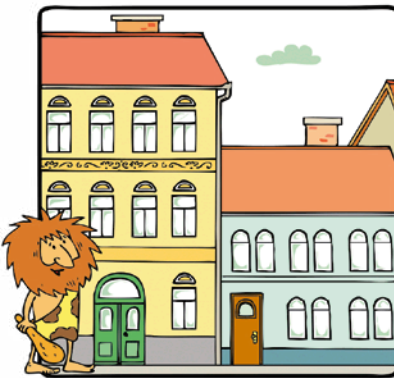
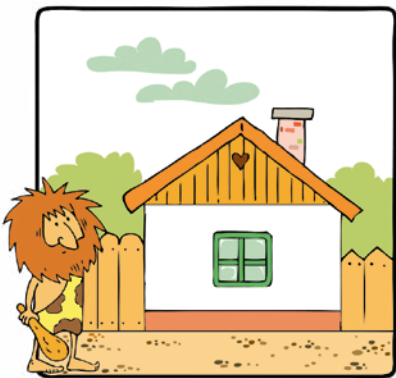
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# WHY DID WE SETTLE, AND HOW?



## 1. What is the background story of where you live?



- Complete the table for your own town.

Name of your town	
Meaning of town's name	
Geographic coordinates	
Year of foundation	
Size of population when exercise was solved	
Key settlement factor	
Classification according to layout	
Name the key cultural and natural values of where you live	
Which institutions and natural sights do you like where you live?	
Which institutions and natural sights do you consider somehow problematic?	
If you wanted to take a job now where you live, what options would you have?	
If you were in charge of the village or town, what development ideas would you have?	

2. In the previous exercise you assessed and collected the environmental and social characteristics of where you live.

ASPECTS	RESULTS	SHORTCOMINGS
natural environment		
social environment		
economic environment		
infrastructure		

Describe the achievements and shortcomings of where you live with regard to sustainability.

3. How well do you know your home town?

- a) Work in pairs. Sketch a map of the place you live. Include the institutions and sights that are important for the functioning of the town. Create a legend, and place it in the bottom right corner of the map. Here are some aspects to help you:
- parts of the town (if there are multiple districts),
  - main square, centre,
  - location of rivers and lakes (if any),
  - green spaces, parks.

b) What would you tell visiting tourists about these?

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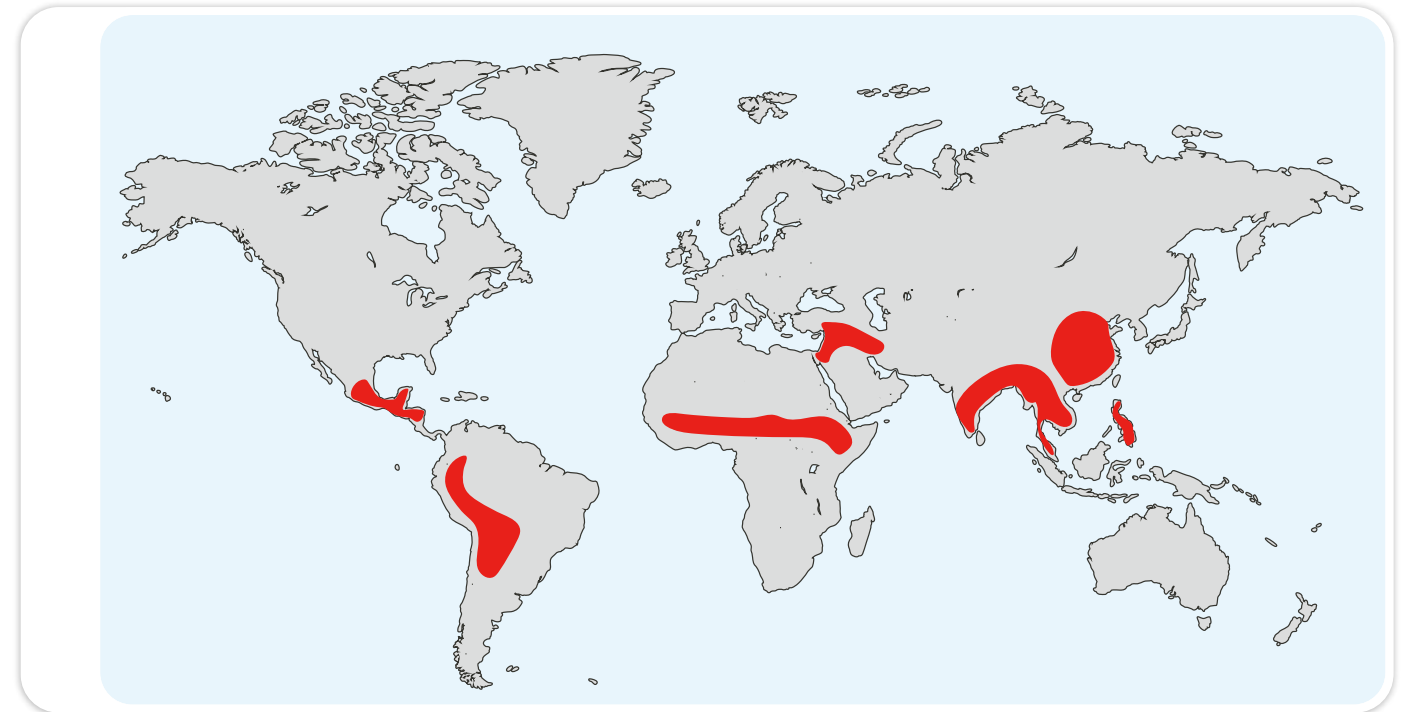


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4. Draw the location of each continent's first centres of civilisation on the map.



a) Add to their names at least three pieces of information: e.g. when they existed, population size in their heyday and now, factor(s) influencing their establishment. Write the names and the related information for each centre on the lines.

1. Central America: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

2. South America: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

3. Africa: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

4. Southwest Asia: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

5. Southeast Asia: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

6. South Asia: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

7. Europe: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

8. Europe: \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

b) Why did some of these become depopulated?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

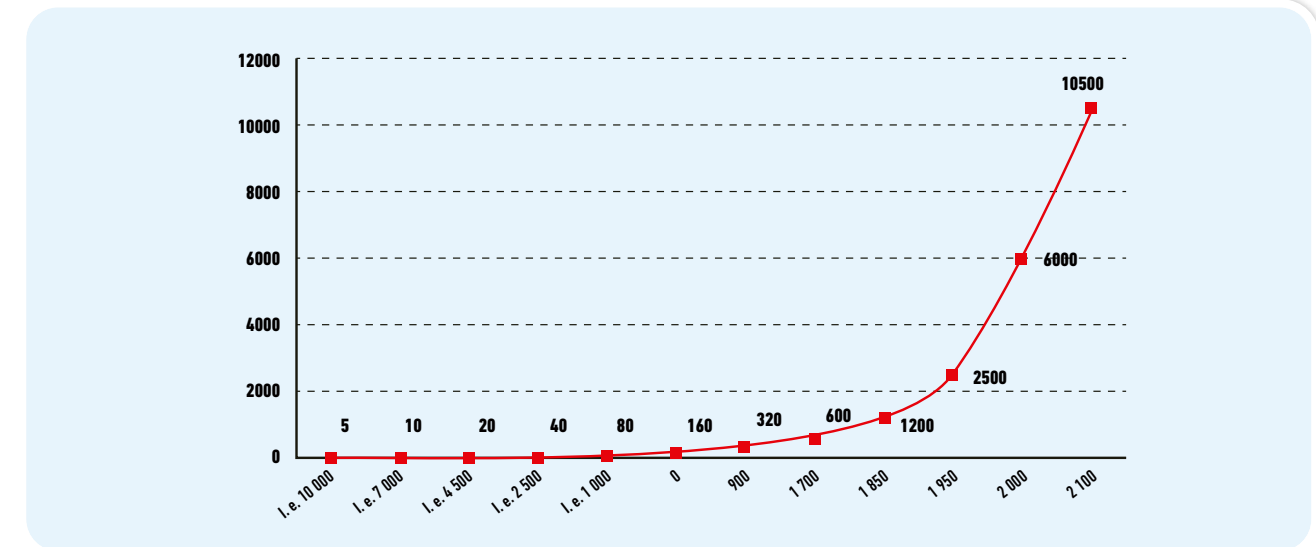
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5. Study the graph and answer the related questions.



Changes in the world's population and expected trends

a) What was the size of the Earth's population at the beginning of the Common Era and in 1000? \_\_\_\_\_

Which continents were the most populated at that time? \_\_\_\_\_

b) When did the population of the Earth reach 1 billion people? \_\_\_\_\_

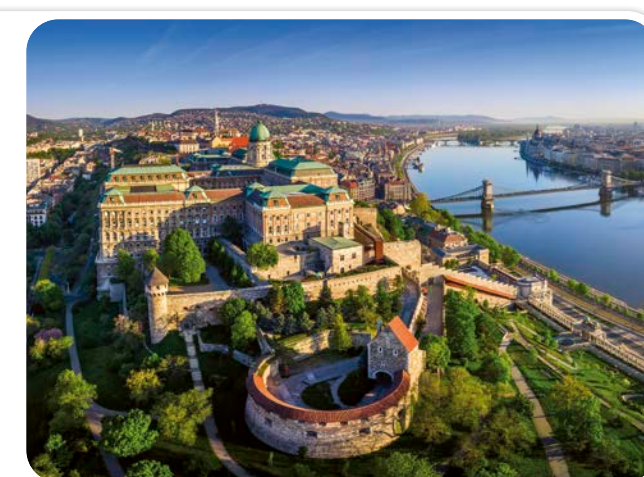
Which were the most densely populated areas at that time? \_\_\_\_\_

c) Which continent was populated last? \_\_\_\_\_

What could be the reason for it being populated so late? \_\_\_\_\_

6. Which factors influenced the formation of the places in the images?

Use an atlas or the internet if necessary.



Budapest

Factor:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Biel/Bienne, Switzerland

Factor:

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Krakow, Silesia

Factor:

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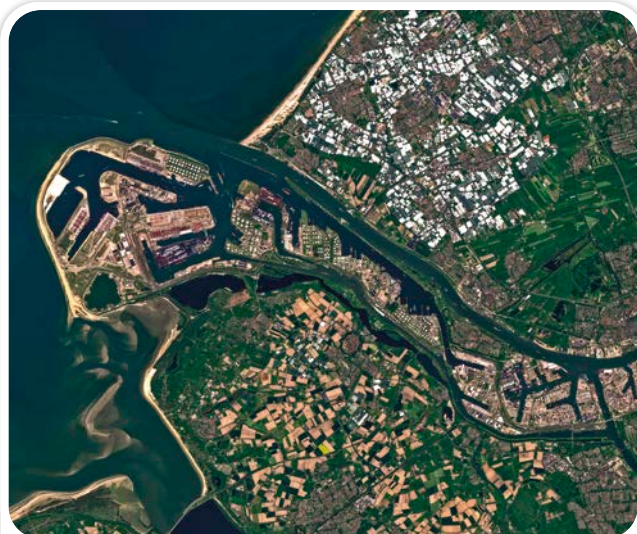
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Rotterdam, The Netherlands

Factor:

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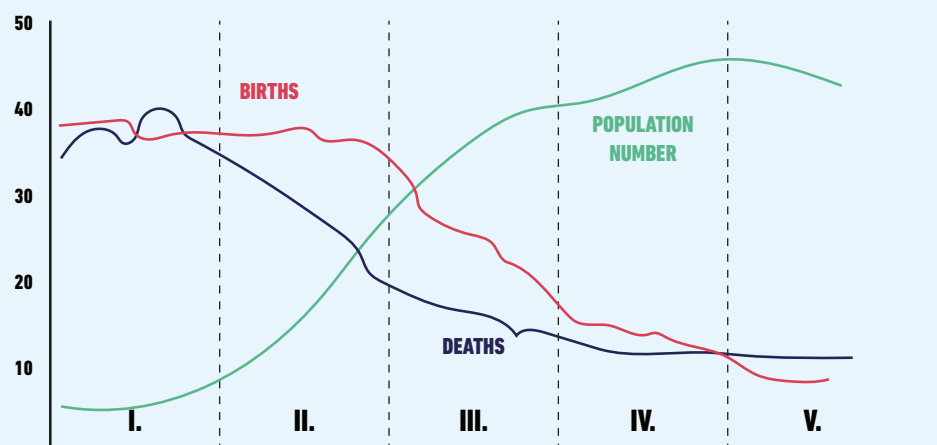
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**7. Calculate the distance between your town and the neighbouring towns.**

Create a scaled radial diagram with your town in the centre. You can use an atlas, or even a mobile application for help. Determine which level of the municipal hierarchy the marked places are at, and write their rank next to their name.



8. Study the following graph, then link the statements below the graph to each section. Write your answer on the line after the statement.



1. Massive urban growth begins in Western Europe. \_\_\_\_\_
2. Fast development in technology, ideal of an agricultural society becomes outdated. \_\_\_\_\_
3. Abu and his wife are expecting their seventh child, but there are only three alive out of the six siblings. \_\_\_\_\_
4. Rudy's grandfather died when he was 35 years old. \_\_\_\_\_
5. Focus switches to industrial production and the development of industrial technology. \_\_\_\_\_
6. There are more and more nursing homes. \_\_\_\_\_
7. Frank and Angie have one child, who is an outstanding medical student. \_\_\_\_\_
8. Urban migration becomes a mass phenomenon in peripheral countries. \_\_\_\_\_
9. Population growth falls due to low birth rates. \_\_\_\_\_
10. The emergence of liveable cities prompts people to move back to the city. \_\_\_\_\_

9. What conclusions can you reach based on the following newspaper article extract?

Read the quotes and write at least three conclusions.

a) "The depopulating hamlets [...] are located on the periphery, both geographically and economically, and these are usually cul de sac villages or villages beside the border. [...] There are small villages to where no one has moved in the new millennia, so there are more and more empty houses: on average, half of the properties are empty in small villages, but there are villages where this rate is around 70-75%. They typically do not have stores, pubs, a post office or a doctor's surgery."\*

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b) "People in the 70s got more and more bored with the hectic, urban lifestyle, and the lack of plants and animals, so ecovillages started to emerge all over the world, where people could retreat to nature..."\*\*

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10. In this exercise, we focus on liveable cities.

a) Find the previous year's ranking of liveable cities on the internet. Write the names of the top 5 cities on the line.

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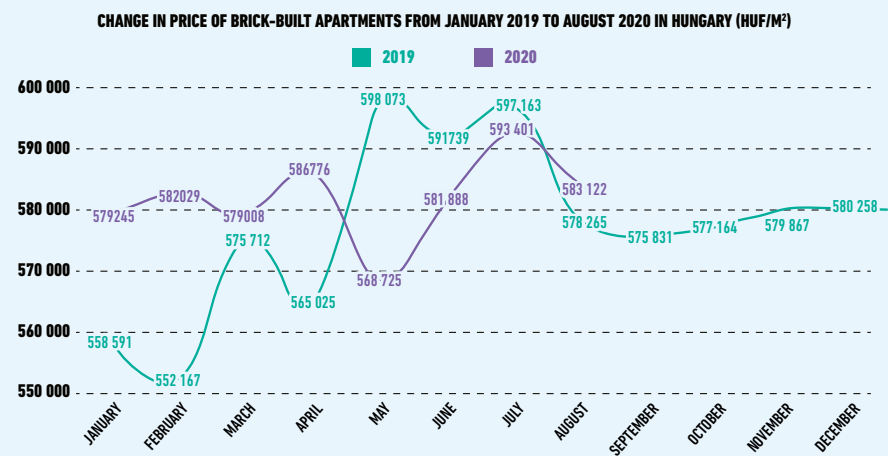
b) How would you make your home town more liveable? Work based on the aspects listed in the table.

Aspects	Village/Town:
learning opportunities	
health opportunities	
cultural opportunities	
recreational opportunities	
level of infrastructure	
natural environment, greening	
eco-consciousness	



**11. Study the graph and answer the questions. Write your answers on the line after the statement.**

Uncle Alex would like to move to the city to be closer to his children. The price of rural properties and his savings limit his options, since he only has HUF 15 million in total. What could his thinking process have been when he answered the following questions?



- Based on the graph's data for 2019, when would it not have been advisable for him to buy an apartment?

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- When in 2020 would it have been best for Uncle Alex to buy an apartment?

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- Could he have afforded to buy a one-room studio apartment (at least 25 nm) in 2019 without taking out a loan?

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- When did the prices of apartments start to decrease drastically in 2020, which it would have been worthwhile exploiting during the purchase?

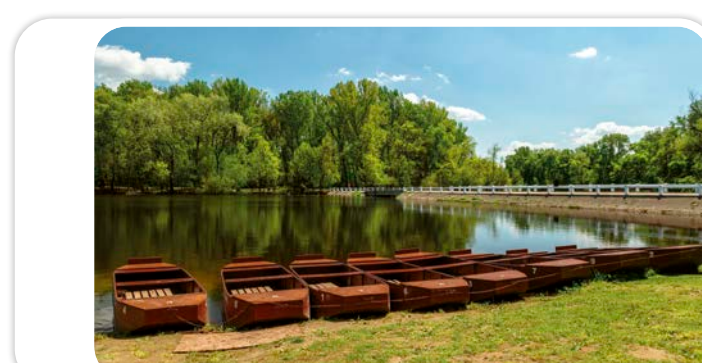
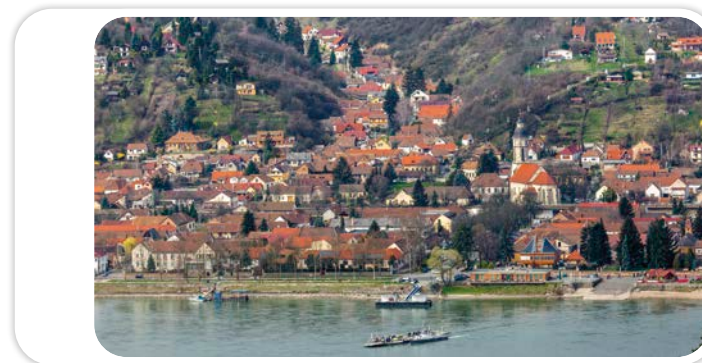
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- What could be the reason for the decrease? Think it through, what happened in 2020 that could have influenced prices.

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**12. Rural life, or the buzz of the city?**

- Argue the case for rural life. Convince your classmates who live in the city why living in a small rural town is good. Summarise it in 4-5 sentences. The images can help you.



- Argue the case for city life. Read the text extract on city life for this.

I have lived in a village all my life, and I always envied my friends who came to Pest for their studies and told me all the things they did on Saturday nights for instance. Where I was born, there was only one disco, which is where I met up with friends. It wasn't that great. I went to high school in a city 30 kilometres away from our village. I boarded, but I didn't enjoy it because of the strict policy. Luckily, I got accepted to university when I finished, and the world opened up. I love the theatre and the cinema, which I rarely had access to back home. Ever since then I have been doing many things; yesterday for example I went to the Mai Manó for a photo exhibition with my girlfriend. The hall of residence is packed with life. I joined a drama club. We are rehearsing an absurd tragedy, which we are going to perform on New Year's Eve. I've just been asked to be a bass player in the hall's band. I am not sure I have the time, but I want to do it.

Besides university, three times a week I work at a warehouse as a material handler. With this I earn the money I need for everyday life. I don't ask from my parents, only if it's really necessary. I already know where I'm going on an internship. In my field, multinationals will jump at the chance to have me work for them. That's brilliant. Unfortunately, I did not even dare dream about this back home, because job opportunities are very scarce there. Some people have difficulty getting used to the masses of people, but I really enjoy the fact that Aunt Myrtle does not watch my every move. Whenever they saw me with a girl, 5 minutes later half of the village thought I was going to marry her. Or if I put on a more fashionable outfit, they criticised and gossiped about me. Here, no one cares who I'm dating, or how I dress; I can live the way I want to. Of course, that doesn't mean I don't get homesick, or that I'm not glad to spend some weekends at home, but I prefer this busier lifestyle to a quiet everyday life.

c) Complete the table based on the given criteria.

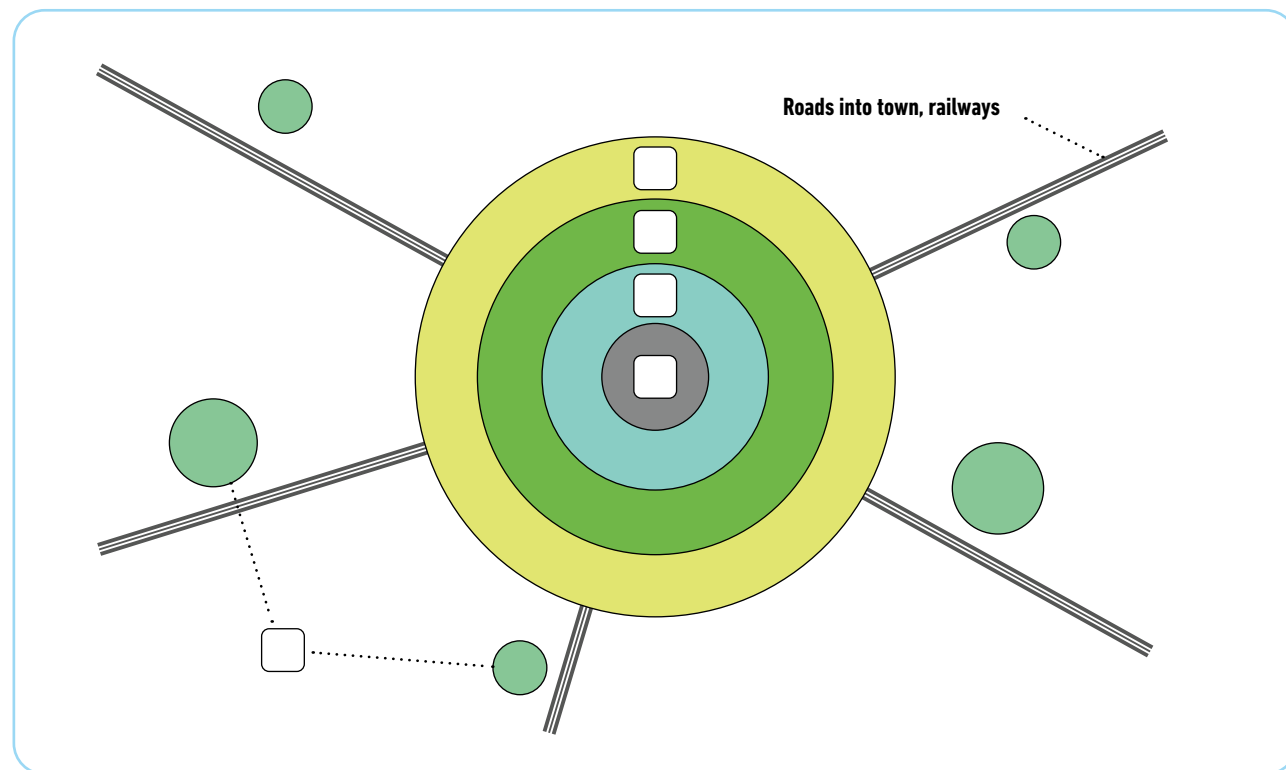
Aspect	Urban		Rural	
	for	against	for	against
human relationships				
carrier				
infrastructure				
cultural programmes				

**13. Do you know what the Citta Slow movement is? Find out information on it.**

- Which countries have cities that are members of this movement? \_\_\_\_\_
- What are the advantages of the movement? \_\_\_\_\_
- Find out which Hungarian cities belong to this category.  
\_\_\_\_\_
- Would you like to live in a "slow city"? \_\_\_\_\_

**13. The following graph shows a schematic diagram of a city.**

- Write the number of the images in the right place.
- Name at least one environmental problem that is related to the image.



Environmental problem:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



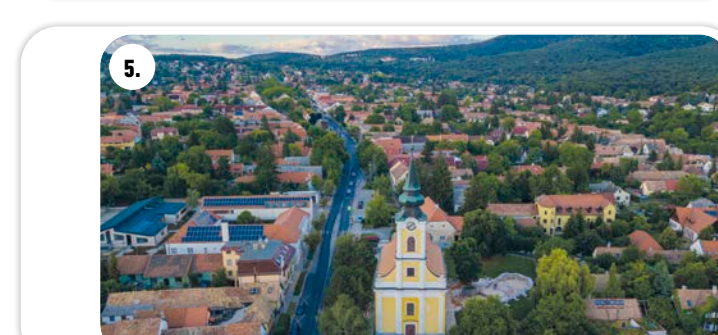
Environmental problem:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Environmental problem:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Environmental problem:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Environmental problem:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

15. Compare the three types of town based on the given criteria. Complete the table with other criteria that you think are important.

	Town	Village	Farm
Settlement factors/potential energies			
Task/role			
Built-up area			
Occupations of population			
Function (residence, workplace, other)			
Population size			
Dimensions			
Structure/layout			
Other			

16. Rewrite the words of Géza Gárdonyi to make this text true for a town in rural Hungary.

*"I love the village. I love the tiny, white houses shaded by trees; the wide, grassy streets where the carts slide into the ditches, but water never does; I love the big mulberry trees leaning over the fences, which have a sighing soul;..." (Géza Gárdonyi: A falu dicsérete [The Praise of the Village])*

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17. Opinions on blocks of flats divide society.

- Based on the given criteria, list the advantages and disadvantages of this type of home.



Blocks of flats, or not?	Pros	Cons
structure of block of flats (floor, walls, ceiling)		
heating system		
thermal insulation		
renovation/maintenance		
interior design of flats		

- Find out how many people live in blocks of flats in Hungary today.

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**18. You established a construction company in the Northern Great Plain region, which specialises in building modern passive houses.**

- Make a brochure considering the following criteria. Make sure you include the advantages of each criteria in the advertising material.
- Include the following factors:

a) Choose one natural material from the textbook that is suitable for building a passive house. What are the advantages of the chosen material?

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b) Choose a renewable energy source necessary for the energy and hot water supply of the house. Justify your choice.

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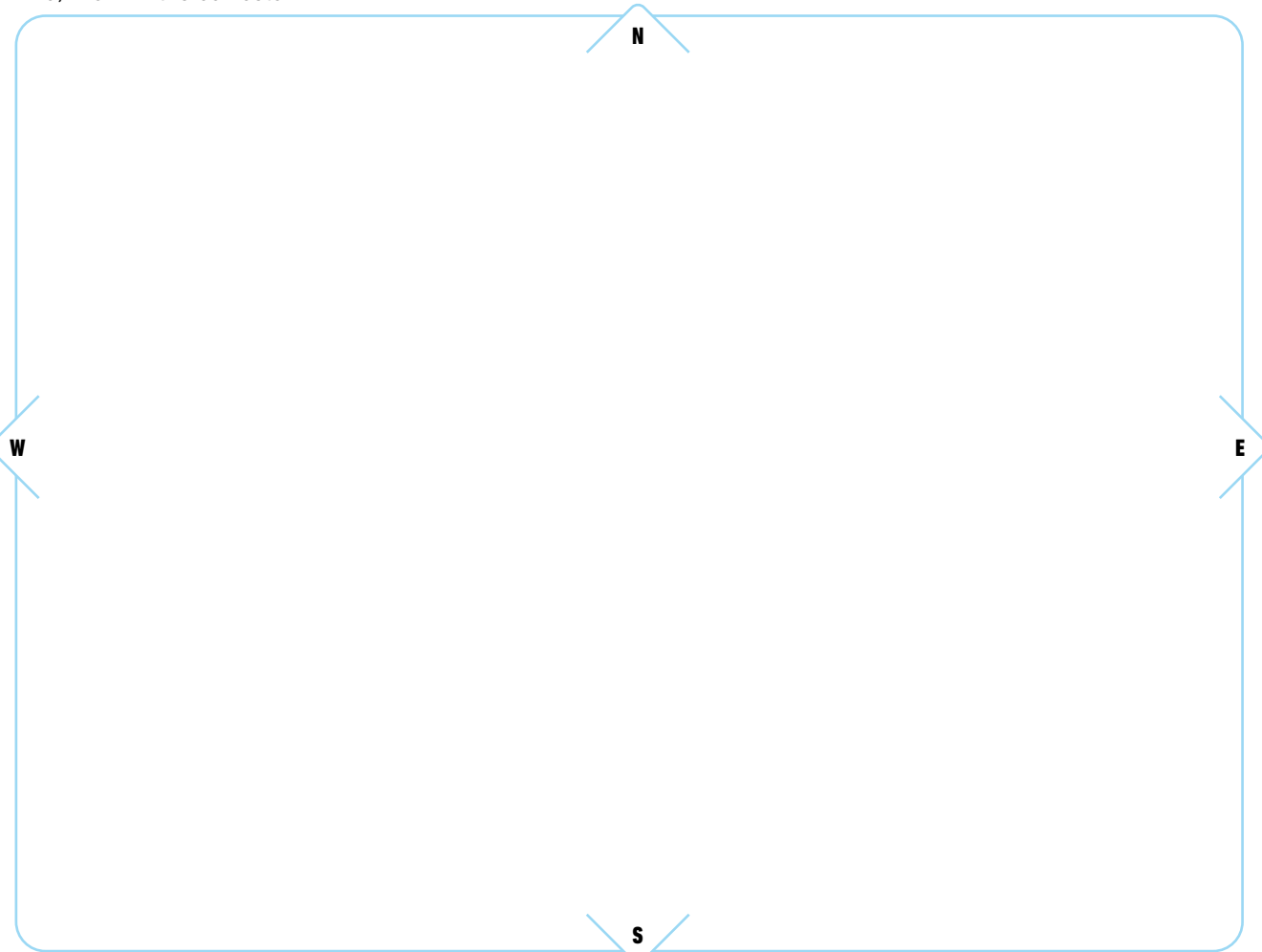
c) Design the water supply of the passive house (e.g. water pipes, accessibility, cleaning, grey water use, rainwater).

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d) Work in the box below.



**19. Connect the images to climate regions or zones. Write the name of the climate region under the images.**

- a) Justify why the given construction method is typical of that area.
- b) Name two specific countries where you can see this construction method in use.
- c) What construction problems might these countries face?




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b) Calculate by using the poster and the given data.

How much energy is needed for travelling?



- Population of the Earth (2020): 7.6 billion people
- Length of Hungary's railway line: 7,945 km
- Energy consumption of a Gigant locomotive still in use today is about 22 kWh/km

1. How many kilometres would we travel in total if we travelled along Hungary's railway line 88,000 times?

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2. What is the overall energy consumption during the journey if we travel with a Gigant locomotive?

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3. How much is the energy saving of the Earth's population per capita?

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4. If you saved this much every day, how many kWh would you save in a year?

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5. If you saved this much every day, how many kWh would you save in 50 years?

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c) Record how much energy your family consumes on a workday, and on a weekend day, between 7 am and 7 pm.

Time (meter reading)	On workdays	At the weekend
7 am		
7 pm		
Consumption		

– Explain what the reason could be for the difference between the energy consumption of these two days.

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– How could you save on a weekday?

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– How could you save on a weekend?

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### 21. Diary entry

– Look at the images. Choose an image, then write a diary entry on how your day would go if you lived in the world presented on the image. Factors to consider during writing: food source, energy source (heating, lighting), waste management, water supply (drinking water, irrigation, drainage).



modern eco-house



farm



smart house

– Read out loud to each other what you wrote.

22. Take a look at the images and the related concepts. Summarise the sustainable, modernisation measures of the given city. If you do not know the answer, look up the concepts on the internet.

improvement in public security

cycle path, greening

"An advanced city is not where the poor own a car, but one where the rich use public transport."

Enrique Peñalosa

Bus rapid transit

Transmilenio



linear city

drinking water

robot

shore of the Red Sea

investment



service

Saudi Arabia

luxury hotels

King Abdullah Economic City

creating jobs



respect for the Earth

1968

2800 inhabitants (2018)

Auroville: social life without power structures

spiritualism





**23. The following text is about farms located on the Great Hungarian Plain. What are their roles in sustainability? Split into groups and find the answers to the questions under the text.**

Some city dwellers move to farms to manage land, or simply because they long for a quieter lifestyle closer to nature.

*"Since they consciously prepare for farm life, they respect both nature and the traditions. Having a minimal environmental impact and producing good quality products usually play a prominent role. The market is initially friends and acquaintances, and later the local market.*

*If the farm's soil is of poor quality, livestock farming (sheep, horses) tends to dominate; in addition, they usually grow vegetables, fruit and herbs around the house, which they sell processed. Making quality products comes at a higher cost though. Unfortunately, the prices of farm products cannot compete with multinational enterprises, so the viability of such products is uncertain. Since small farm production centres around human activity, this could play a vital role in creating eco-farms, where there is a possibility for sustainable farming.*

*Over the centuries, farms have been operating within the framework of sustainability, but thanks to collectivisation, cooperatives and the production processes of state farms conforming to the socialist market, environmentally aware operations in the agricultural sector have not been achieved."*

1. Why do people purchase farms in Hungary today?

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2. What roles could these settlements have in sustainable farming?

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3. What problems do farm producers have to deal with when selling their products?

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4. Why was farm life connected for many centuries to the concept of sustainability, which was not even known at that time? What upset this balance?

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5. Write three arguments for and against farm life; make sure to include factors of sustainability.

a) \_\_\_\_\_

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b) \_\_\_\_\_

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c) \_\_\_\_\_

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6. Organise a debate between a farmer and a representative of a multinational company in the area. The topic of the debate is commercial pricing.

What questions would you ask if you were the moderator of the debate?

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

**24. Fact or opinion? Make a decision on the statements. What makes you think that? Justify your choices. Write F (fact) or O (opinion) before the statements.**

- When defining a landscape, only the topography has to be considered.
- It is cheaper to live in the city.
- Cities have special climatic conditions, unlike small towns.
- Smart towns are easier to form by involving the inhabitants.
- Passive houses do not use more heat energy than they produce.
- Local economic development involves the local population.
- The disappearance of local producers from the market does not cause any problems because multinational enterprises compensate for the missing products with their own.
- Factors of sustainable urban planning include, for example, environmentally friendly transport, optimal population density, and appropriate waste management.
- The renewal of cities and districts makes moving back to the city appealing again.
- Settling down in rural areas could be helped by the fewer built-up areas, being closer to nature, and the lower population density.

**25. Make an imaginary interview with different aged inhabitants of an eco-village. Choose someone to interview (15-year-old student, university student, middle-aged mother/father, pensioner). Write the interview in your notebook. Below we give you a few examples of questions. Play out the scene.**

- Why is it good to live in an eco-village? Why do people move here?
- Why do some people nonetheless move away?
- What is your opinion on converting to a subsistence economy?

**26. Based on what you've learned, plan the transformation of an existing place or neighbourhood. Imagine you are going to live here, or even start a family here. Think about what are the simple steps that are easily achievable, and which ones require a lot of money, time and coordination. Focus on the following factors:**

- energy,
- water management,
- planting plants, designing a green belt (design of forest gardens),
- architectural styles,
- establishment of a road network,
- orientation of houses,
- maintenance of cultural and natural values, converting them into a revenue stream,
- job creation with sustainability activities (water management, waste management, energy supply, design and maintenance of green surfaces, etc.),
- market of local products (grown and produced around the area),
- miscellaneous.

You can model your design on a computer, with a drawing, or with a model.



# CONNECTING AND SEPARATING



04



## 1. He could eat a horse

In the classic tale, the organs of the human body revolt against the stomach, because according to them, all it does is eat, lounge around, and do nothing. Then the hand and mouth stop feeding the stomach, and the other organs don't help it either. As a result, the whole system weakens, and dies. Why did this happen? Because the stomach, just like every other organ, plays a key role in maintaining the whole system.

- By analogy with the tale, debate the role and importance of certain social groups in society (e.g. in a factory, in services, in education, in public administration, in agriculture, in health care, etc.).

Social group/role

\_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_

- Working in groups of 4-5, describe and present (like on the news) what the consequences would be if waste management, public utilities, health care, public security, logistics, the food industry or tourism would stop completely for two months.

Chosen social group:

\_\_\_\_\_

Short-term effects of shutdown:

\_\_\_\_\_

\_\_\_\_\_

Long-term effects of shutdown:

\_\_\_\_\_

\_\_\_\_\_



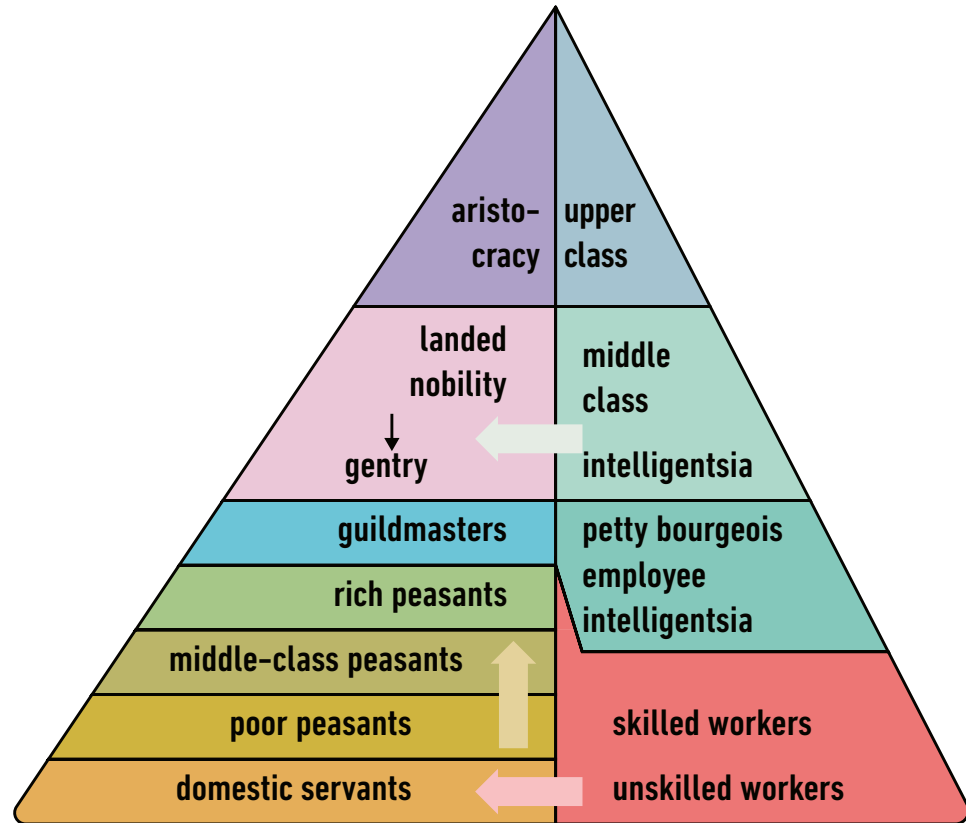
04

## 2. Back to the past

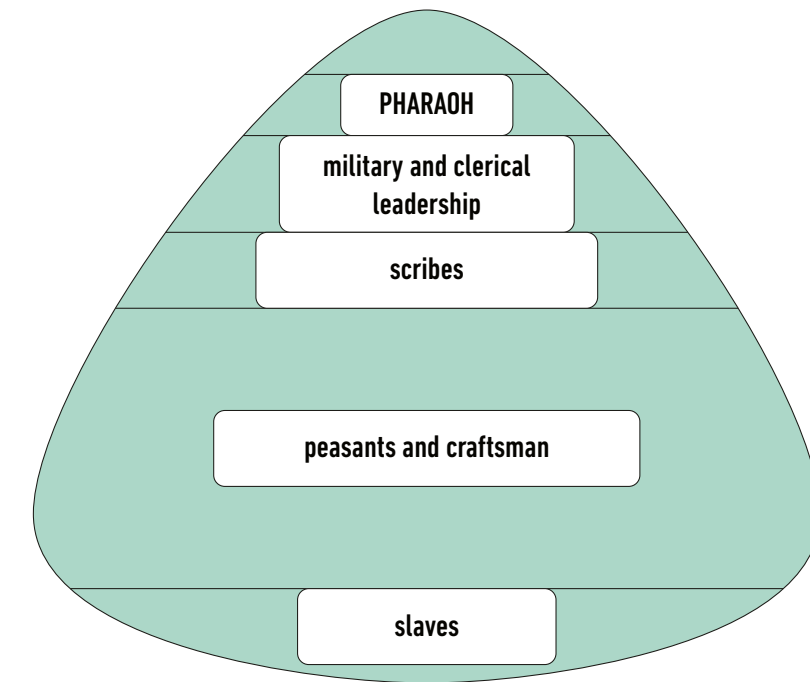
You might already have come across these system diagrams during your history studies.

- Determine which eras and the societies of which states are illustrated by the system diagrams.
- Name the diagrams, then number them in chronological order.
- Summarise how each era transformed its environment, and how did they use natural resources? Discuss how sustainable a given era was, and why.

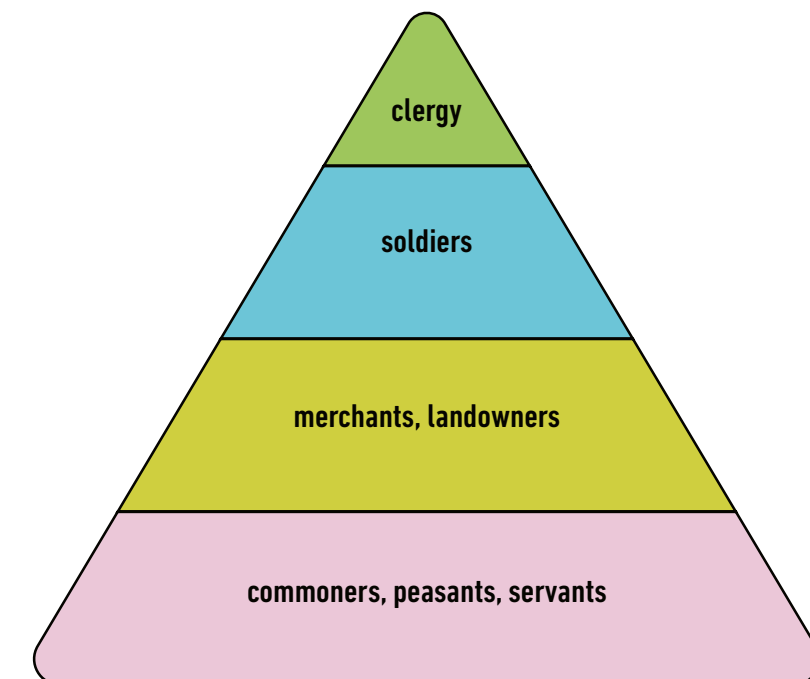
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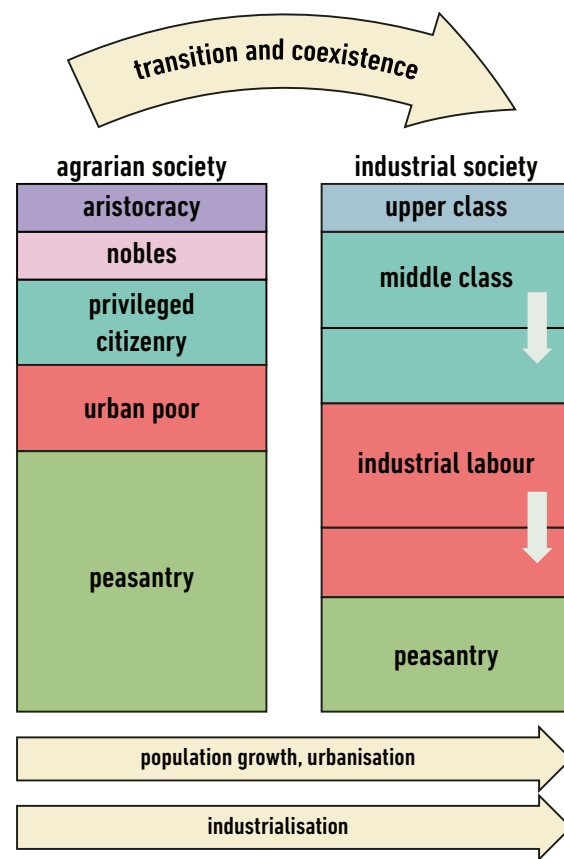
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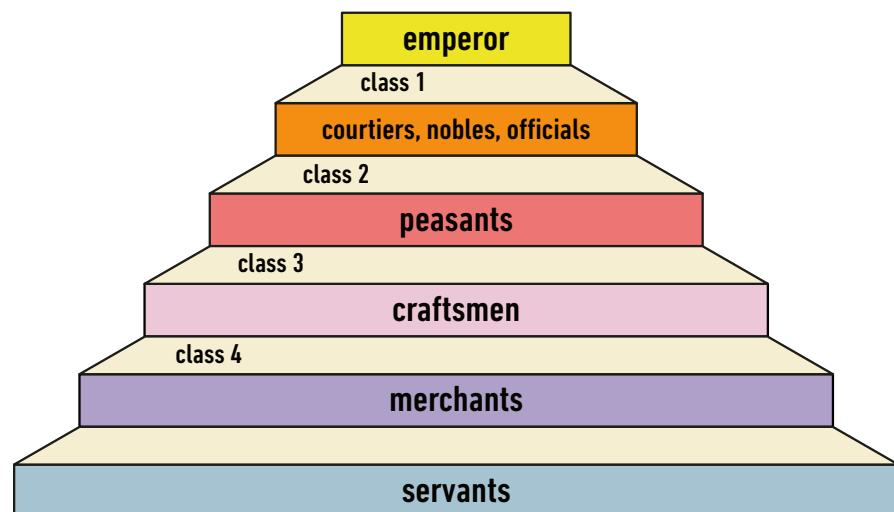
Name of diagram:



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### 3. Types of society

Sociologist Anthony Giddens\* categorises societies into six types during his history analysis: hunting and gathering; pastoral and agricultural; traditional states/civilisations; first-world societies; second-world societies; third-world societies.



Decide which society the following texts are about. Pay attention as to why certain social groups are, or are not, separated from each other in each of the society types.

a) \_\_\_\_\_

Their population is small, their members support themselves from hunting, fishing, and gathering edible plants. The rate of inequality is low, ranks and positions are only divided according to gender and age groups. They have existed for 50,000 years, and today they face the risk of total disappearance.

b) \_\_\_\_\_

These are societies based on village communities, in which towns and cities do not exist. Agricultural production sustains the livelihood of the members, which is usually supplemented by hunting and gathering, or they create the material foundations for their living through the grazing of domesticated animals. These societies are characterised by serious social inequalities. There can be significant differences in terms of material wealth, and bosses exercise power. They have existed for 12,000 years. Today, most of these societies have become part of a larger political entity (community), and they have gradually lost their special nature.

c) \_\_\_\_\_

The economy in these societies is still based on agricultural production, although now there are cities that function as commercial and craft industry centres. These states were sometimes enormous, their population could be up to millions of people, although most of them were smaller than today's societies. The society was divided into different classes, which were in stark contrast with one another. The division was based on legal differences, which was further nuanced by differences in income and education, etc. They existed from 6000 BC to the 19<sup>th</sup> century. These states have now collapsed.

d) \_\_\_\_\_

\*Anthony Giddens, British sociologist, who mainly studies social structures.

These are societies built on industrial production, where free enterprise plays a vital role. Only a fraction of the population works in agriculture, most of them live in towns and cities. There are major differences between the classes, but the boundaries between them are not so stark. It is possible to cross these lines. The social differences primarily emerge based on access to income, education and goods, they are not legal in nature. These societies form isolated political communities or nation-states.

*They began in the 18<sup>th</sup> century, and still exist today.*

e) \_\_\_\_\_

Industrial-based societies, where the economic system is shaped by central control. Only a small fracture of the population works in agriculture, most live in towns and cities. The classes (working-class, peasants, working intelligentsia) are differentiated by ideology, there are serious inequalities between them (sometimes certain classes are even physically annihilated). The governments of these societies targeted the establishment of classless societies as their objective, and they form isolated political communities or nation-states.

*They were formed after the Russian Revolution of 1917, and (with a few exceptions) collapsed by 1991.*

f) \_\_\_\_\_

These are societies where most of the population live in villages and work in agriculture, but sell their products on the global market. In addition, there is industrial production based on free enterprise here. There are major inequalities in society with regard to income, access to goods, and education. These societies form isolated political communities or nation-states.

*They were created as colonised regions.*

#### 4 You learn for yourself

Based on data collected from the Hungarian Central Statistical Office (KSH), working in pairs create a statement on the differences in income between the educated and non-educated in Hungary.

- Create a comparative diagram or infographic using the data.
- Present your results, indicating the exact sources.
- Debate what conclusions can be drawn from the results.

Conclusion: \_\_\_\_\_

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#### 5. Growth, development

List some examples to present the process of development and growth from different areas of life. The following examples will help you with this.

area	living organisms	growth	weight gain, fattening	devel- opment	child learns to read
area	economy	growth	expansion of factory's territory	devel- opment	introduction of waste-free technology
area		growth		devel- opment	
area		growth		devel- opment	
area		growth		devel- opment	

- Using the examples, create definitions for the concepts of growth and development.

growth: \_\_\_\_\_

development: \_\_\_\_\_



**6. Humans are born to work, birds are born to fly.**

Argue for and against the following thesis: The reason why humans rule the Earth is because they were the most adaptable. Write three arguments for, and three against.

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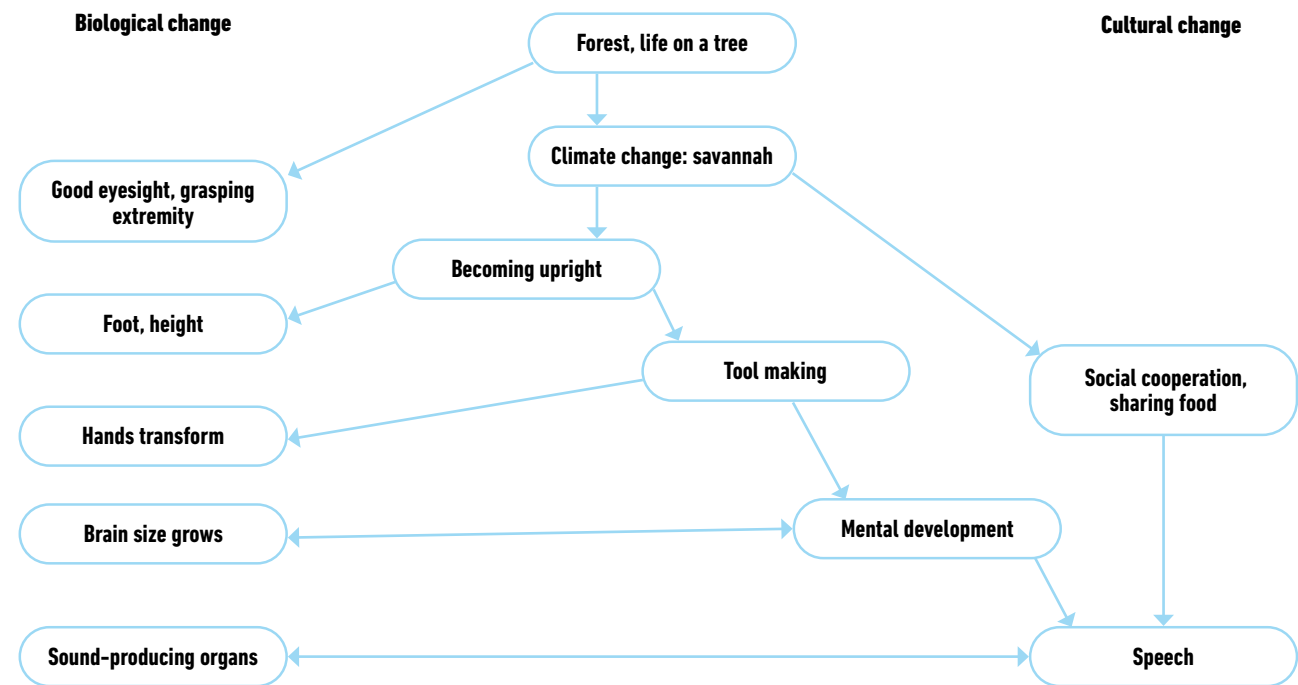
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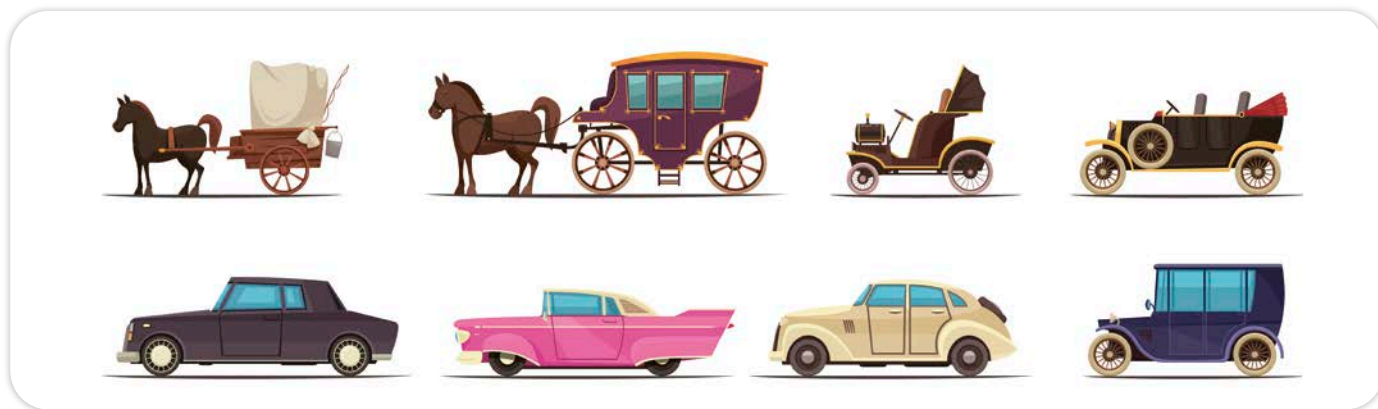


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**7. Changing horsepower**

Before the invention of internal combustion engines and steam engines, considerable growth was forecast in the use of horse transport because of the increased demand. Accordingly, the issue of epidemics was envisaged due to the accumulation of horse manure. Technical progress refuted this vision, but it introduced a new, implausible problem that many could not foresee. This problem was the impact on our planet's climate of harmful products from burning fuels. Currently, the major economic and political powers in the world see electromobility as the solution to the climate problem.



- Describe what advantages, disadvantages, opportunities and threats electric vehicles could have.

advantages	disadvantages
opportunities	threats

Is there any solution to the problem that does not create new problems?

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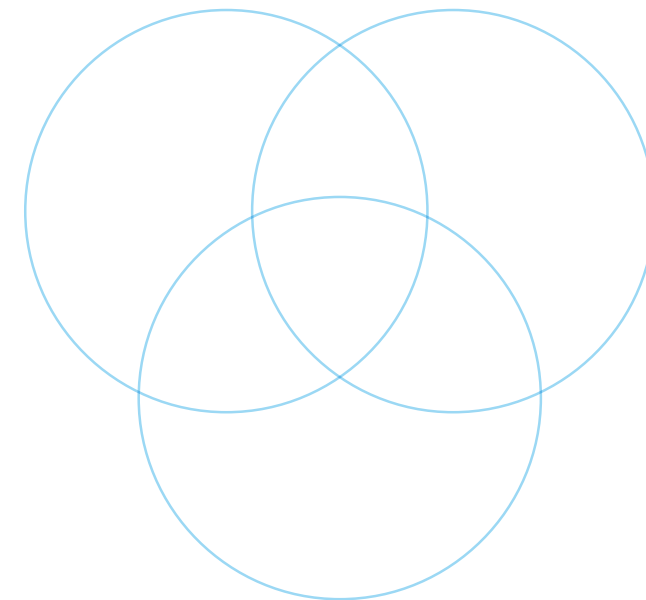


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**8. Cornerstones of sustainability**

The systems of economy, society and nature are the three fundamental parts of sustainability. Working in pairs, use a visual method to show how these three areas are connected to each other. Use what you have learned about the relation of mathematical sets to each other.

Show the finished graphics to the others, and discuss them.



**9. Target areas**

There are 17 goals defined in the 2030 Agenda:



- Categorise the goals based on which economic, social and ecological categories they belong to. Write the number of the goals wherever you think they belong the most.

<b>ECONOMIC AREA</b>	
<b>SOCIAL AREA</b>	
<b>ECOLOGICAL AREA</b>	

- Choose which might belong in the set of basic human needs, and in the set of equality and justice. Write the numbers in the sets. Explain why a given goal could even fit into both of the categories.



- Is there one that belongs in the intersection of the two sets? If yes, why? Write down your arguments.

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**10. Interpret the cartoon in terms of realising the two potential goals below.**

Goal: maintain the current consumer society.  
 Goal: achieve sustainable management.



What could the specific goal be in the first case?

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What could the specific goal be in the second case?

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**11. Advertising**

Make an advertising video about a product where sustainability aspects are considered when it is purchased. Before you make the film, briefly jot down

- the idea of the film:

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- the content:

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- and how the environmental aspect appears in it:

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**12. So many countries, so many customs**

- Find short videos on the internet (e.g. on websites covering UN sustainability), which present the daily lives of people living on different continents (e.g. Papua New Guinea).
- Compare their needs to yours.

Title of chosen short film: \_\_\_\_\_

Topic: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

needs in the film	own needs

**13. This is what I need! Is this what I need?**

- Working in pairs, name some examples of needs from your own life, in addition to basic needs.
- Choose a need from your partner's list that is important to them. Argue for this need to be treated as a want.

a) Own needs: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

b) Chosen need of my partner: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

c) Arguments for the want: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**14. Desires and needs**



Find an example of your own for something you used to treat as a want, but now it has become a need of yours. What would it take for this need to become "just" a want again?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**15. Theories on needs**

Working in groups of threes, do some research on the needs theories of the following academics (Maslow, Alvin Toffler, Erich Fromm).

- Make a 4-5 minute presentation of your choice for the class.

Most important conclusions on each theory:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Find any common points between the theories.

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Create and describe your joint complex needs theory.

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- Collect other theories related to needs.

Creator: \_\_\_\_\_

Theory: \_\_\_\_\_

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Creator: \_\_\_\_\_

Theory: \_\_\_\_\_

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## 16. Generational differences

The difference between needs and wants changes not only on a social basis, but also over time. The wants of our parents and grandparents were completely different from ours. Ask your parents and grandparents what their wants were when they were your age, and what their current wants are in terms of meals, leisure and work.



- Make a table to record your answers. Compare your answers with those of your classmates.

	Past wants of my grandparents	Current wants of my grandparents	My wants
Work			
Leisure			

- Discuss what the reason could be for a big difference between the wants of each generation.

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- In your opinion, could a problem arise due to the difference between the wants of the generations. If yes, how could you resolve it?

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**17. Out in the world as a young person**

Working in groups of 4-5, find out what the life of a Nigerian, German, American, Afghan and Hungarian teenager is with the help of blogs, articles, and films on the internet. Choose one of them, and compare them to an average Hungarian of the same age. To help you, we've provided some aspects you can expand on.

Selected teenager: \_\_\_\_\_

Aspect	
school	
leisure	
life at home	
fear	
vision	
desire	

- Specify where the used sources can be found.

- Present your results. Discuss what the reason could be for the differences.

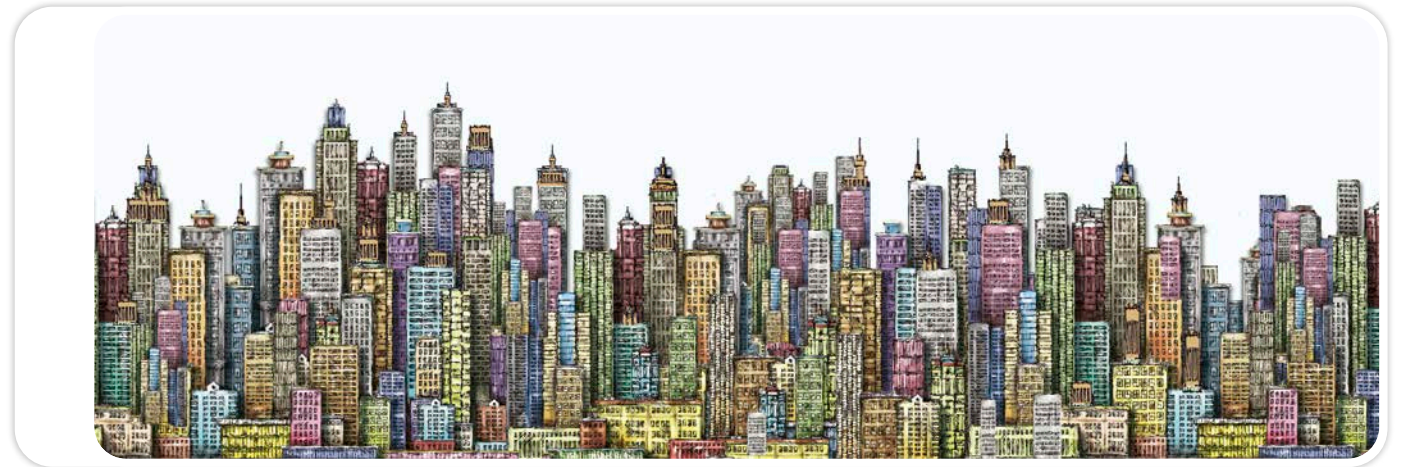
**18. Do you need a new mobile phone?**

How often do people replace their mobile phones, and why?



- Working in groups of 4-5, conduct surveys by age groups on the reasons for replacing mobile phones.
- Rank the reasons indicated most often.
- Find alternative solutions to avoid buying a new phone.
- Create awareness-raising posters from your results.

**19. Beat it village, here comes the city!**



You can map population concentration and urban population growth based on data from the UN's website.

- Figure out:
  - which areas of the continents experienced large-scale urbanisation in 1970,
  - which areas of the continents will likely experience the largest-scale urbanisation in 2030,
  - where the megacities (population of 10 million or more) were located in 1970, and where they will be located by 2030.
- What issues does the process of urbanisation anticipate?

- What solutions would you suggest? What ideas do you have to deal with the problem?

**20. The magic of numbers...**

a) HDI (Human Development Index)

Check the UN's HDI data with the help of the internet. Find out which countries are at the top, which are at the bottom, and where Hungary is located. (If you type the UN/undp and HDI acronyms into your search engine, they're easy to find. But here is a little help: "Latest human development index ranking".)

b) *SPI (Social Progress Index)*

Check out the SPI data on the statista.com website. Find out which countries are at the top, which are at the bottom, and where Hungary is located.

Briefly describe what the difference is between the two series of data (HDI and SPI). Include the reasons too.

Lined area for writing a response to the question about the difference between HDI and SPI.

c) *GDP (Gross Domestic Product)*

Compare these data series with GDP data, which you can find on the World Bank website. (Make sure only to compare data from the same year.)

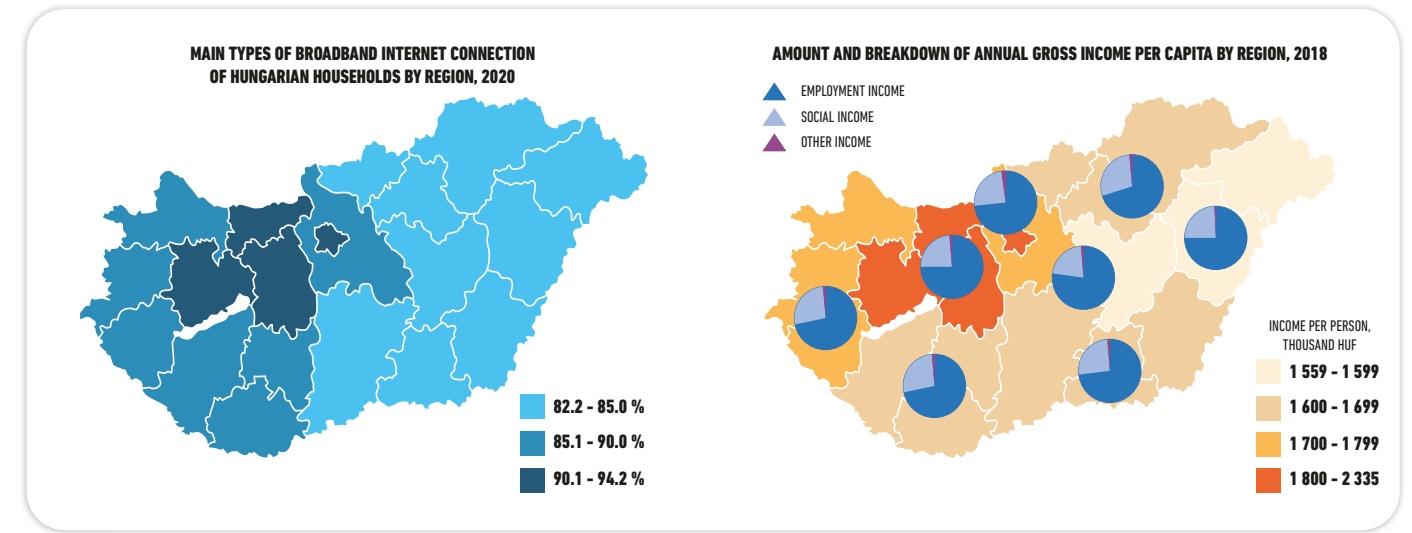
See who are at the top and who are at the bottom of this list.

Lined area for writing a response to the question about comparing data series with GDP data.

Compare the data, and describe the characteristics as well as connections between the series.

**21. What does the internet access depend on?**

You can see two graphs below from the Hungarian Central Statistical Office (KSH).



- Compare the two maps and identify connections.

Lined area for writing a response to the question about comparing the two maps.

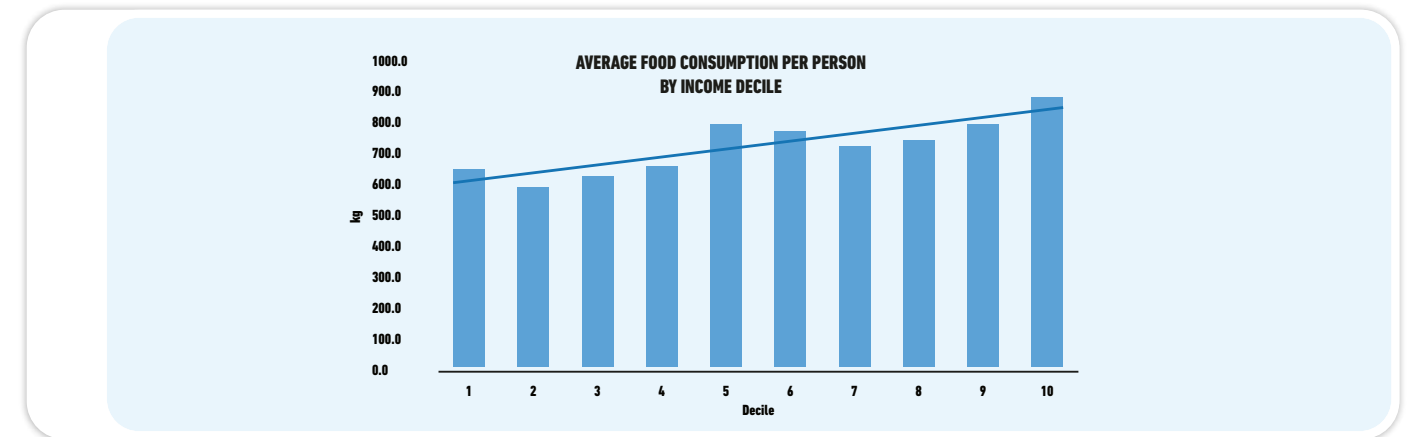
- What effect could this have had on teleworking?

Lined area for writing a response to the question about the effect on teleworking.

**22. Situation of domestic food consumption**

We can rank society into 10 groups based on income. These income groups are termed 'income deciles'. Based on KSH data in 2019, in the lowest income decile the average gross income per person was HUF 509,000, while the same in the highest income decile was HUF 4,885,000.

In 2019, the average food consumption per person in kg according to the income deciles was as follows.



- What correlation or trend can you describe based on the graph?

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- What could the fluctuation on the graph signify?

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### 23. Income and nutrition

The following table shows itemised data on average food consumption per person. Answer the questions based on the data.

Average annual food consumption [kg] per person in 2019 by income decile										
Description	Deciles 1	Deciles 2	Deciles 3	Deciles 4	Deciles 5	Deciles 6	Deciles 7	Deciles 8	Deciles 9	Decile 10
Cereals* in total	100.3	86.4	89.3	89.0	101.6	94.4	88.9	90.3	95.0	100.0
Meat in total	68.0	57.2	57.9	67.1	71.6	69.3	68.5	71.1	69.2	87.9
Fish, canned fish	1.8	2.0	1.8	2.0	3.0	2.3	2.2	2.7	3.1	3.4
Milk (litres)	52.9	47.0	52.6	49.1	66.4	62.3	53.5	60.8	59.7	57.2
Yogurt, kefir, sour cream (litres)	9.9	9.4	10.7	12.2	13.6	13.6	14.0	14.8	14.4	18.3
Cheese, quark	6.3	5.9	7.0	6.9	9.2	8.5	8.6	9.1	10.1	12.3
Eggs (no.)	158	138	158	153	191	172	150	150	161	183
Fat in total	20.6	18.1	18.0	19.2	23.4	20.3	20.8	19.7	19.2	23.8
Fruit in total	44.8	32.5	39.3	44.6	58.5	57.9	58.0	62.1	58.1	79.3
Vegetables and potatoes in total	67.5	61.6	60.4	69.8	84.5	82.7	78.3	83.0	83.5	89.8
Sugar	11.8	10.3	7.7	10.0	14.0	11.6	12.1	11.2	9.8	10.8
Mineral water (litres)	61.0	70.3	70.9	85.3	104.0	113.5	102.6	108.0	133.1	140.3
Soft drinks (litres)	31.1	31.3	31.0	38.5	32.6	41.6	43.0	35.0	42.3	45.1
Fruit, vegetable juices and diluting juices (litres)	6.8	7.3	11.5	13.0	12.4	12.2	13.9	13.9	16.5	19.5
Wines, wine-based drinks (litres)	3.8	3.3	3.1	4.2	6.1	3.8	5.4	5.8	8.2	9.7
	644.7	580.0	619.7	663.3	792.4	765.8	720.2	737.2	782.8	880.6

- Write statements that are typical of the nutrition of the different income groups.

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- Based on the food consumption data in the table, is there a connection between income and healthy nutrition? Justify your answers by using the data.

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### 24. "The poor are the poorest"

To quote the words of poverty specialist Zsuzsa Ferge\*\*: poverty is nothing more than many different types of deprivation, many different types of futurelessness, in other words, the situation where even the children have no hope of breaking out. Attila József described this as follows: "the poor are the poorest."\*\*\*

- How would you define poverty?

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- Does poverty have the same characteristics in Hungary, Canada or India? Give reasons for your answer.

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- What is a person deprived of if we consider them poor?

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### 25. The average, the minimum, and what is below

The following definitions and explanations help with the review of literature.

*Deprived individual:* an individual who is deprived of something; i.e. a person who lacks something that is accessible to most people in the given society, or what is considered to be a desirable, minimum target for everyone in the given society (in our society, this would include a refrigerator, a washing machine or a television).

*Minimum subsistence:* a threshold value of subsistence (income or consumption). This amount is enough to meet the basic needs of a household (in Hungary this term was used officially by experts until 2015).

*Poverty threshold:* refers to households with an income 60% lower than the median income.

*Minimum wage:* a yearly sum defined in legislation, below which an employee working 40 hours a week cannot earn.

*Absolute poverty:* refers to the income level below the minimum subsistence/poverty threshold.

*Relative poverty:* when an individual or family lives way below the average conditions of a given society (e.g. has access to only 40% of the average income, or if having a washing machine is standard for everyone, those who do not have one are considered to be relatively poor).

*Deep poverty:* indicates large-scale deprivation of basic human needs, information, and indispensable services. According to the UN, the number below which people can be categorised as being in deep poverty was 1.25 dollars/person/day in 2001, and 1.90 dollars/person/day in 2015.

- What is the difference between average income and median income? Illustrate this with an example.

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- Find out what the average wage (gross and net) and median income are in your country today.

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- What is the minimum wage in your country?

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- How many people live below the poverty threshold today in your country?

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## 26. Deprivation

The following data is from the KSH website.

**SEVERE FINANCIAL DEPRIVATION IN EU MEMBER STATES BY KEY ITEM, 2011**

(ratio of those in need, %)

EU Member States	Severe financial deprivation	Key items				
		Holiday	Heating	Meat	Unexpected expenses	Unpaid bills
<b>EU-27</b>	<b>8.8</b>	<b>37.8</b>	<b>9.8</b>	<b>9.6</b>	<b>37.7</b>	<b>8.9</b>
Austria	3.9	21.6	2.6	7.2	22.8	4.1
Belgium	5.7	27.8	7.1	4.8	26.1	6.0
Bulgaria	43.6	73.3	46.3	50.8	65.3	28.6
Cyprus	10.8	47.1	25.0	5.2	51.5	16.6
Czech Republic	6.1	41.8	6.4	10.7	40.4	4.3
Denmark	2.6	11.5	2.6	2.4	24.9	3.9
United Kingdom	5.1	29.8	6.5	4.9	36.7	5.0
Estonia	8.7	48.3	3.0	10.4	44.7	11.8
Finland	3.2	14.8	1.8	3.2	27.4	7.8
France	5.2	27.7	6.0	6.8	33.0	7.1
Greece	15.2	51.2	18.6	9.2	34.4	23.3
The Netherlands	2.5	17.3	1.6	2.8	21.7	2.4
Ireland	7.8	48.5	6.8	2.8	54.4	14.8
Poland	13.0	60.5	13.6	14.1	51.2	12.9
Latvia	31.4	63.3	22.6	31.2	80.4	24.1
Lithuania	18.5	49.1	35.7	23.0	60.4	11.9
Luxembourg	1.2	14.0	0.9	1.8	23.0	2.2
<b>Hungary</b>	<b>23.1</b>	<b>66.1</b>	<b>11.7</b>	<b>29.0</b>	<b>74.0</b>	<b>23.0</b>
Malta	6.3	53.6	17.6	9.9	26.4	8.2
Germany	5.3	22.8	5.2	8.8	34.5	3.9
Italy	11.2	46.7	18.0	12.4	38.6	12.1
Portugal	8.3	57.2	26.8	3.1	29.1	6.7
Romania	29.4	76.1	15.7	21.8	50.3	27.2
Spain	3.9	39.4	5.9	3.0	35.4	5.0
Sweden	1.2	10.2	1.6	2.1	16.6	4.1
Slovakia	10.6	49.7	4.3	23.2	35.8	6.4
Slovenia	6.1	31.7	5.4	10.4	46.7	17.3

- Write down

- What is the EU average in terms of severe financial deprivation?

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- Which three countries are in the worst place, and which are best positioned?

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- Where Hungary is located in the ranking?

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- Which key item defines and characterises poverty the most? Does any trend emerge?

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What could cause a problem at each juncture?

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What could be the connection between the economic development of a given country and the listed data?

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How could deprivation be decreased in your opinion? With what steps?

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How do you think this data could have changed over the past years? Discuss!

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### 27. Quark as a luxury item?

Due to swine fever in China, a significant part of the swine stock had to be culled. Currently, the increased demand for eating pork makes it necessary to increase the pork stock drastically. The corollary of this is the rise in fodder prices, including the rise in soy, rapeseed, and sunflower prices, which impacts on the prices of similar products from other countries. Among other things, this is one of the reasons for the increased prices in domestic cooking oil.



- Similarly to the cause-effect relation of the above example, analyse the following imaginary situation.

Due to its strengthening economy, the inhabitants of a distant country can afford to consume more and more Hungarian quark that is unique in the world and exotic for them. How does this impact on the market situation of Hungarian quark (e.g. on supply and demand)? What could be done in this situation to prevent quark becoming a luxury product in Hungary?

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### 28. Competition absurdity

It is a global phenomenon that the funding systems promoting electromobility are essentially only available to people who are financially better off. A less wealthy household has no opportunity – not even with state aid – to purchase an electric car, while the wealthier could do so even without help.



- Find out what the argumentation is behind the aid system referred to above.

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- How would you transform this financial mechanism so that the less wealthy could also have access to such modern cars?

### 29. The importance of ethical behaviour

A recently discovered desert island in the middle of the ocean is perfect for a landfill. Tréland is starting the large-scale transportation of waste to the island. Another country, Géland, does not favour this as there is a risk that the leaking waste juice will severely pollute the fishing areas where they get their fish from. So it imposes various economic sanctions on Tréland, who in turn considers the accusations groundless though, and points out that for decades Géland used the land of a third country, Véland, to store its unusable electronic waste. Due to the economic sanctions, Tréland is forced to restart factories that are quite polluting, and which also endanger the territory of Véland.

- Split into four groups.
- Three groups should act as the representatives of the three countries affected, while the fourth group should act as an international community decision-making corps (ICDC), to which countries all over the world delegate members, i.e. including the three countries affected too.
- All three countries should describe the situation from their own point of view, and come up with proposals for solutions, which they bring to the ICDC.
- Based on what is said, the ICDC should form its own position and propose a solution.





# COOPERATION FOR A SUSTAINABLE FUTURE



## 1. Be persuasive!

Below you can choose from three essay assignments. All three of them are a little bit different from each other – open letter, argumentative essay and opinion essay – so pay attention to the genre characteristics.



### a) Open letter

Write a letter to the head teacher in which you elaborate why you think it is important to participate in the movement organised to save the nearby park woodland.

### b) Argumentation

Why is it good to be an eco-school?

### c) Expression of opinion

The school management decides to initiate voluntary work every year in an area that pupils can regularly help according to their free time and opportunities. They asked the pupils to voice their opinions and justify them too.

Possible voluntary work:

- Visiting a home for the elderly in the neighbourhood: organising activities, assisting them during walks, talking with the elderly residents.
- Helping maintain the park next to the school: litter picking, planting, watering.
- Shopping, walking the dogs of elderly people in the neighbourhood.
- Helping families in need.

**2. Whose responsibility is it?**

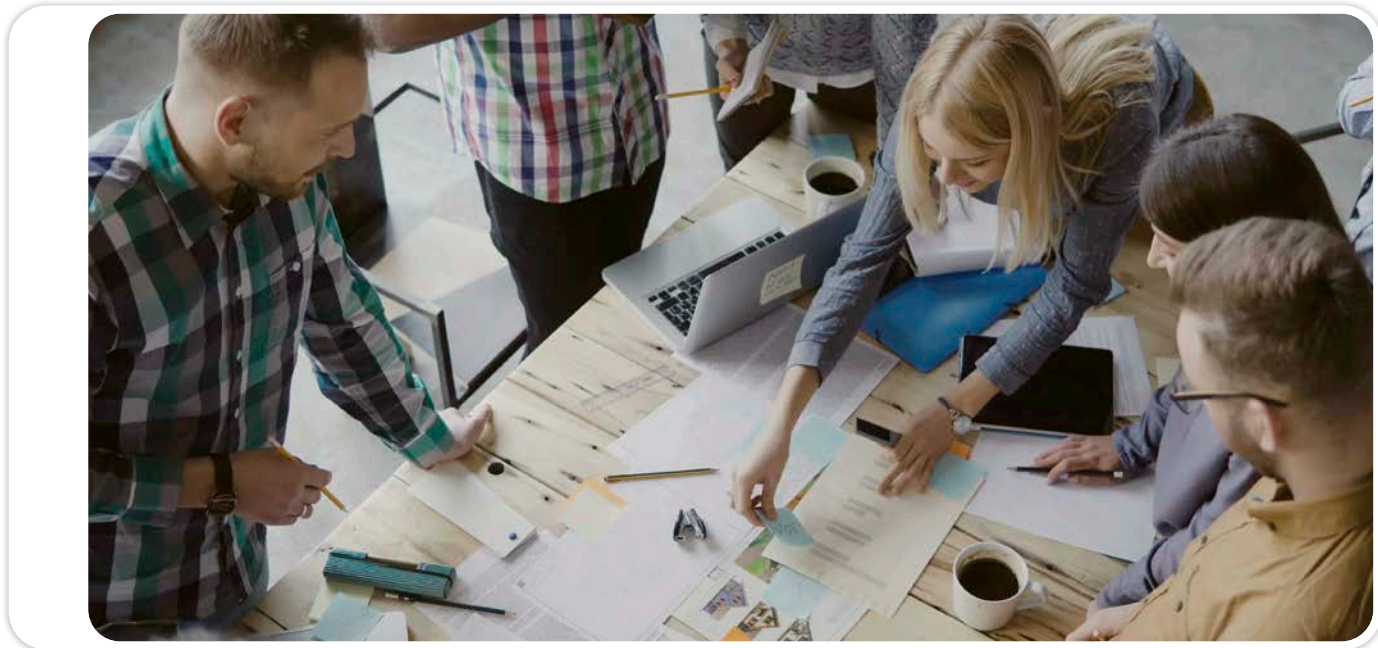
Come up with arguments for and against the following statement.  
We are the generation of the future. It is your (the adults') responsibility how we are going to live.

Arguments for	Arguments against



**3. Where, what, how?**

Choose an area of sustainability in your school that is important to you, and for which you'd like to do something as a class (e.g. grassing the playground, composting green waste, no parking in the playground, etc).



Solve the task based on the following steps:

- Split into groups of 4-5 people.
- Decide with your group what you should do, and why.
- Draw up an implementation plan.
- Discuss the position and plans of the group.

**4. Who are fighting, and why?**

a) Find out who is fighting for sustainability and why.

SPOKESPERSON	GOAL	SUGGESTION

b) If I was an influencer.

What would you gladly be a spokesperson for? How would you do this, through which channels, and what would you say?



**5. Identify the pairs**

Write the following names next to the appropriate description.

- Sustainable development goals
- Millennium development goals
- National Framework Strategy on Sustainable Development
- Earth Summit
- Rio + 20
- National Council for Sustainable Development

DESCRIPTION	NAME
A framework of 17 goals and 168 targets to be achieved by 2030. It was developed by the United Nations member states and was accepted in 2015, and it serves as the international framework and guideline for sustainability.	
The goals which underlie the development policy implemented by the United Nations between 2000 and 2015.	
The Parliamentary Resolution entitled "The National Concept of the Transition to Sustainability" adopted in 2013, in which Hungary committed itself to implementing the sustainable development requirements for the period 2012-2024 and listed its policy tasks.	
This international organisation is responsible for monitoring the current status of the sustainable development requirements, and reporting on them.	
A United Nations conference held in Rio in 2012, which in its closing document urges the setting up of a working group to elaborate the tasks related to sustainable development.	
A United Nations conference held in Rio in 1992, which for the first time emphasised the correlations between the environment and sustainability, and led to agreements in practice that saved certain areas from environmental destruction.	

**6. What actually happened?**

a) *Millennium development goals*



Choose one piece of data from each topic of the UN report on which millennium development goals were implemented. Use the original report.

Eradication of extreme poverty and hunger

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Universal primary education

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---

Promote gender equality and empower women

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---

Reduce child mortality

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---

Improve maternal health

---



---

Combat HIV/AIDS, malaria and other diseases

---



---

Ensure environmental sustainability

---



---

Global partnership for development

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b) *MDG and SDG*

- Split into groups of 4-5 and divide the eight Millennium Development Goals (MDGs) between you all.
- Each group should report on the implementation of the chosen goals by 2015, emphasising a few pieces of important data. Highlight the tasks that are still to be done.
- The groups should examine which of the goals not implemented are among the Sustainable Development Goals (SDGs).
- Each group should present their own area.

Goal: \_\_\_\_\_

Achievement: \_\_\_\_\_

c) Do we have anything to do with space debris?



The UN's Sustainability Working Committee has decided to add one more sustainable development goal. One of the potential subjects is the issue of space debris and the peaceful and sustainable utilisation of space.

I agree that the problem of space debris and the peaceful and sustainable utilisation of space should be one of the sustainable development goals.

I disagree that the problem of space debris and the peaceful and sustainable utilisation of space should be one of the sustainable development goals.

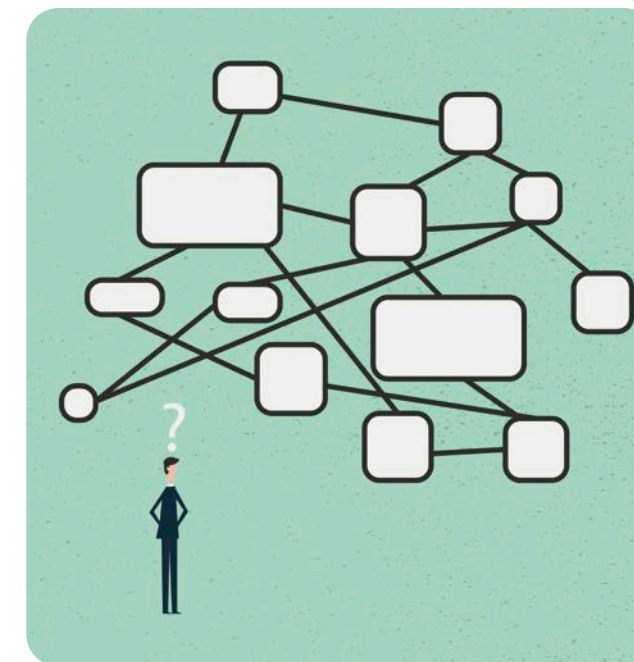

### 7. School sustainability goals

Elaborate some sustainable development goals of your school based on the SDGs.

- Your programme should link in with the implementation of four sustainable development goals of your choice.
- Present it to the school's management.



### 8. Our resources for sustainability



Create a concept map on which you demonstrate the interconnections of the four national resources (human, social, natural, economic) of the National Framework Strategy on Sustainable Development.

**9. Who, where, why?**

Find out who are the members of the National Council for Sustainable Development (NCSD). Why are they the ones who have a seat on the council?

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Is there another organisation which you think belongs there?

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Why do you think so?

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**10. What is in the Fundamental Law?**



List everything that Hungary's Fundamental Law includes regarding sustainability.

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What would you potentially add to the Fundamental Law?

**11. Sustainable development goals and the framework strategy**

Make a summary on how the sustainable development goals were incorporated into the Framework Strategy of the National Council for Sustainable Development.

**12. Make a prediction!**

Choose a resource group that you find interesting. Go through the *Progress reports* published so far, and describe the emerging trends in the resource group of your choice. What changes are expected within this resource group in the next report based on the previous processes?

**13. International organisations and activities**

a) *Events*

Decide which events the following descriptions are about. Use the textbook if necessary.

DESCRIPTION	Event
The first UN-level summit on environmental protection, focusing on the impact of human activity on the environment. The United Nations Environment Programme (UNEP) was established as a result.	
Publication of the work entitled "The Limits to Growth".	
Analysis of the correlation between environmental, economic and social problems, and the negotiation of potential joint solutions.	
A legal obligation for developed countries to meet greenhouse gas emission reduction targets.	
The approval of sustainable development goals.	

b) *What are the acronyms hiding?*

Write the original name of the organisation next to the given abbreviation. Write the Hungarian names too after the non-Hungarian acronyms.

UN	
UNESCO	
FAO	
WHO	
UNEP	
IUCN	
WWF	
IPCC	

#### 14. Our place in the world

Several UN organisations have offices in Hungary.



- Make a list of them.
- Choose one organisation that is important to you and introduce their activities. Compile an introductory poster to get others interested in the activities of the organisation too.

#### 15. WWF

Make a list on the activities of the WWF.



- Find out whether there is a question or issue in your broader environment which the WWF is trying to find solutions for.
- What does the organisation suggest in such cases?
- What could you add to the general recommendations of the WWF? Make a plan to solve the problem.

#### 16. How well do you know Hungarian organisations?

Complete the following table, in which you can read about a few Hungarian environmental organisations.

(To help: comprehensive national database of civil society organisations – [https://civil.info.hu/civil\\_szervezet\\_kereso/index](https://civil.info.hu/civil_szervezet_kereso/index))

Logo / name	Description of activity
	<p>“The members of the Greenzone Environmental Association work towards decreasing the environmental impacts of events, they organise charity team-building events, make playhouses from waste, and take on environmentally friendly gardening jobs. Through all of these tasks we advertise the principle of conserving materials and resources, and the importance of consumption that is in tune with the environment.”</p>
	<p>“We are a green organisation based in Eger, we build a society that is sustainable at the environmental and social level through education, raising awareness, active environmental protection, spreading information and the development of local communities, civil society organisations and democracy.”</p>
	<p>“The goal of the association is to promote sustainable development by preserving natural values, raising awareness, via community organisation and advocacy. With their programme entitled ‘Making the world round’, they successfully began forming a completely new network and developing the community.”</p>
	<p>“The members of the Association, which was founded in 1989, are found in every county of Hungary and they fight to preserve our natural values and to prevent environmental impacts. In collaboration with national organisations, especially with the Friends of the Earth network, we play a key role in civil environmental partnerships of Europe and the world.”</p>
	<p>“The Hungarian Association of Environmental Enterprises improves the state of the environment in Hungary, the development of an environmental culture, and raising environmental awareness with its own methods. It organises and unites the organisations and enterprises working in the area of environmental protection and sustainability; it harmonises and represents their interests from a professional perspective.”</p>

### 17. Those who act

Find other sustainability organisations and initiatives in your neighbourhood in addition to the ones listed. Make a short presentation of their work.

### 18. Earth Day



Your class undertook the task of organising the Earth Day programme for the next academic year. From the outset, there is a debate about whether the event should be just for the school community or for a larger community (parents, local residents). The questions revolve around the organising tasks.

#### Fundamental questions

a) If you choose to organise it for the school:

- How many people do you have to organise activities for?
- Which age group do they belong to?
- How much time do you have for the organisation?
- What activities would you like to organise?
- What is the location of the event?
- How will you group the participants (individually/in groups/in classes, etc.)?
- How many people do you need to organise it?
- What costs do you have to consider?

b) If you choose to organise it for the wider community:

- How many people do you have to organise activities for?
- Which age group do they belong to?
- How much time do you have for the organisation?
- What activities would you like to organise?
- What is the location of the event?
- How will you group the participants (individually/in groups/in classes, etc.)?
- How many people do you need to organise it?
- What costs do you have to consider?

#### Questions related to content

a) If you choose to organise it for the school:

- What is the goal of the event?
- What activity/activities can you deploy to achieve it?
- When would you say it was successful?

b) If you choose to organise it for the wider community:

- What is the goal of the event?
- What activity/activities can you deploy to achieve it?
- When would you say it was successful?

Create the script for the Earth Day programme for the chosen audience.

### 19. A fair, but not just any fair!



The local government is asking for your help with the call for tender for next year's Christmas fair. Make a list of the sustainability/environmental aspects that you think should be taken into consideration as regards such a community event.

### 20. The world of companies

a) Match the terms with the descriptions. (Not every concept has a match.)

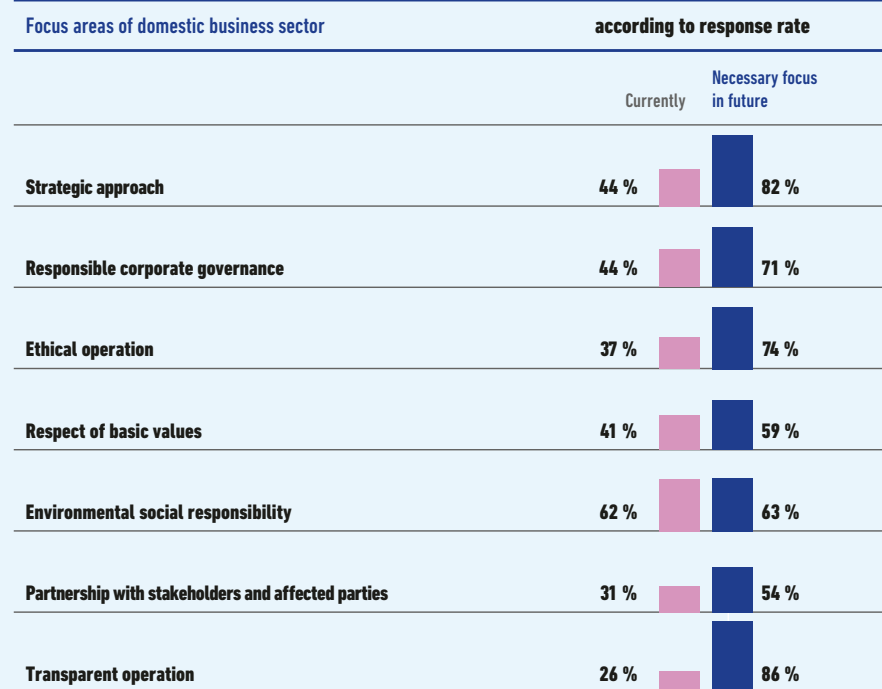
#### Terms:

- corporate social responsibility,
- social entrepreneurships,
- partnerships,
- social economy

DESCRIPTION	TERM
"...it integrates social and ecological goals into corporate objectives in a way that economic success can be combined with social and environmental benefits (a mutually beneficial situation)."	
"...organisations that engage in economic activities primarily to complete their goal or mission. According to their perspective, this represents a shift from representing social targets towards economic activities, the goal of which is to provide the resources necessary to reach their objectives."	
"... refers to the economic activities of the community, voluntary, and social business sectors. Economic activity, as in every other economic sector, means employment, financial transactions, asset management, pension issues, commerce etc."	

b) Study the graph and solve the tasks.

- Based on the graph, give reasons why environmental protection is also important in the business world.
- List some focal points that, in addition to environmental responsibility, are also connected to the quest for sustainability.
- Justify your choice.
- How does the expected emphasis shift in the focal points influence the quest for sustainability?



### 21. Social enterprises

Collect examples of social enterprises concerning environmental protection and sustainability. Choose one and present its activity and results to your classmates.



### 22. Sustainability club

The school has set up a sustainability club.

- Describe the goal of the club.
- Describe its operating framework.
- Write a recruitment manifesto.
- Make awareness-raising posters.
- Design the logo.
- Compile a programme plan for a complete academic year.



### 23. Appraisal

A) List 2 or 3 things that you have done personally in the interests of sustainability

- in school,
- within your group of friends,
- within your family.

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B) Was there a time when you felt you should have done something but you didn't do it in the end?

- What was holding you back?
- What would you do today in the same situation?
- Why?

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