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## SUSTAINABLE DEVELOPMENT GOALS



## Green Planet

# Green

# Planet

ECO

# Green Planet

**KÉK·BOLYGÓ**  
ALAPÍTVÁNY

 **Alapértékek**  
Nonprofit Kft.

 **OKTATÁSI**  
**HIVATAL**

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# Sustainable development?

## What is that?



### CONTENTS

- DR. CATTLE
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### THIS IS AN INTRODUCTION, BUT PLEASE READ IT!

Listen!

Let's take the pandemic as an example. I bring this up because it demonstrates very clearly that seemingly distant things can impact on each other. How does a virus like the coronavirus, which used to reside in animals, especially in bats, cause a pandemic? And, of course, no matter where it first appeared, it instantly spread to many countries around the world.

We can also see ourselves that as a result of warming temperatures and changes in rainfall patterns, the mosquitoes that prefer tropical climates and spread diseases such as West Nile fever and Zika virus have suddenly started to thrive elsewhere too. They are now able to breed in Hungary because of the milder winters. Their presence is made all the more unpleasant by the fact they also attack during the day. Researchers are constantly studying them to be able to signal when they become a threat in our local environment.

#### Things are interconnected

*Want to be king? Make your bed!*

For example, you may have a family rule that you can't play on your computer until you make your bed. But why do we make our beds? This habit stems from wanting to keep airborne dust and dirt as well as the germs and viruses stuck to our day-to-day clothing out of the bed we lie in all night; this is how our ancestors and parents managed to protect their health.

*If you want to work out, learn maths!*

Another family tradition is that if you do well on your maths test, you can get a gym pass. If you work out, you'll not only look good, but you'll also be fitter, and you'll be able to keep doing well at maths. (Just kidding, you don't necessarily have to go the gym to be fit.)

These two humorous examples are meant to illustrate that seemingly distant things can be connected. And it is particularly important to look for connections when talking about sustainability.



With deforestation and urban sprawl, humans have become spatially closer to each other and to virus-carrying wild animals. This is one reason, for example, why viruses can spread more easily from animals to humans. Viruses that are only carried by wild animals, but do not make them sick, can be dangerous to humans. Of course, there are some pathogens that do not spare animals either, even causing the extinction of entire populations.

And the icing on the cake is that this phenomenon is not independent of the economic characteristics of individual areas: poverty, wealth or ignorance. People are sometimes forced to eat wild animals because of hunger, while in other places this is the privilege of the rich, an indicator of wealth.

Braised bear meat or shark fins are unfortunately considered a delicacy in certain areas. Pangolins are believed to have medicinal properties, and the same goes for rhinoceros tusks, which is why these animals are hunted. Unfortunately, despite the fact that most of these animals are protected, they can still be obtained by those who are willing to pay huge sums of money for them.

The situation is even more complicated than that, however, because those who come into contact with the animals presumably also get infected because the animals are often kept and transported illegally and in an uncontrolled manner, in cramped, inhumane and unhygienic conditions.

Viruses are insidious biological micro-organisms, and sometimes people may be unaware that they are virus carriers. Someone may go on a trip, or to a sports match, or to a shop, where they touch a product then put it back on the shelf, stand in a queue, get in a lift and so on, without having the faintest idea they are infecting others – let alone who they infect or to what extent. That's why we need to wear a mask and disinfect our hands during a pandemic.

Mass travel because of cheap flights has accelerated the spread of diseases, not just to nearby countries but also to other continents.

It perhaps needs no further explanation that nothing happens in isolation, without having an impact on things outside itself. This is how poverty, wealth, travel, disease, and so on, are all interrelated. Upsetting the balance of nature means changing the individual elements of the system, while nothing and no one can avoid the impacts.

**What can you do?  
Every step counts!**

The choices you make every day (what you eat, what you wear, how you travel, how you look after your health, what volunteer activities you take part in) are your contribution to a liveable world.

You can get help with all these things in the **GREEN PLANET** textbook.  
Keep up the good work, and have fun!



**“THE FLAP OF A BUTTERFLY’S WINGS IN BRAZIL CAN TRIGGER A TORNADO IN TEXAS”**

The statement in the title is, of course, a figure of speech. It is a simplified way of saying that a minor factor can trigger a series of changes that are difficult to predict. Nevertheless, it is not entirely unrealistic, since every small action we take can affect others.

Let's continue with the list of examples we began in the introduction. Gabriel goes out partying and misses the last bus. While he is walking home, he meets an old classmate. It turns out that this classmate is looking for partners for a software development project in the same field as Gabriel's profession. Gabriel happily takes a job at his classmate's company, where he meets his future wife. They have two children, Jack and Jill. Can we say that Jack and Jill were born because Gabriel missed the last bus?

The behaviour of each of us has an impact on the world around us. We must try to think about the far-reaching effects of our behaviour. If no one took their rubbish and household waste to the forest, or left it by the roadside, then besides not littering the landscape, the pollutants from the waste would not soak into and mix with the soil, while vegetation would be preserved, which would make the air healthier, birds and insects would feel better, and the groundwater that might be used to water our food would not be polluted.

Or, let's look at the economic argument. Some people litter because they don't want to pay for waste collection or for the proper disposal of the waste that was entrusted to their care. These people are fortunately in the minority, but the consequence of their behaviour is that local authorities spend taxpayers' money on cleaning up illegal dumps rather than on modernisation projects, road repairs, street lighting or creating parks.



**YOUR TURN!**

- Collect examples from your own life, when a small act or event has had a far-reaching impact.
- Share the result with your classmates! Ask them to tell similar stories from their own lives.



## ENOUGH COWS!

You cannot step twice into the same stream...

When out hiking, passing a stream, you notice that the water is dirty, the banks have been invaded by invasive plant species, the water has dried up, or the stream has even been drained. Yet older locals tell stories of how crystal clear its water used to be, how they used to play in it, walk barefoot in it, and hide under the bushes. Or the hillside, where your grandparents used to hike and climb rocks, has been almost completely developed. At such moments we are confronted with the fact that if we don't act, there will be trouble, we will have to give up on all that nature has to offer us.



Fortunately, there are good examples as well. One community noticed the deterioration of a stream and worked together to restore it to its original state. The new bushes and trees and the meandering riverbed have been taken over by wildlife and locals now enjoy walking in the area. The remaining part of the hillside, which had been diminished by building developments, has been declared a protected area and can be walked along marked trails, while hikers can enjoy nature, observe plants and animals, and examine the stones.

But in order to know what to do, or what not to do, and what to change, we need to see the links between the state of our environment, our lifestyles, our consumption habits, and our daily and longer-term choices.

### What constitutes development, and what makes it sustainable?

Industrial and agricultural production, municipalities and services are developed to meet people's needs and wants. These developments require land.

For example:

- mines for raw materials,
- forests for timber,
- rivers for gravel.

Municipalities and industrial facilities as well as agricultural production are built in places that were once natural areas. Landfill waste and sewage treatment plants need space too.

It is also important for our health and quality of life that these developments are carried out in such a way that nature and ecological systems are able to provide us with the basic conditions for our lives.

For example, to ensure there is enough gravel left in the river to filter the water, we should not deepen the riverbed so much that the water supply to the riparian areas is threatened.

It is not a good idea to build on the remaining floodplains either. Why?

Because, as the name suggests, these areas are periodically flooded and it can be expensive to protect buildings, while it is also important to give the water space to spread out during floods, and not run off quickly. In such cases, the wildlife in the area is completely renewed, many fish come out to the flooded area to feed and breed, plants are revitalised, our valuable waterfowl get fresh food, the water supply in the area is improved, which is good for farming, and so on.

*Do you remember what you learned in history about riparian cultures?*

Put simply, developments should be planned and implemented carefully, that is, sustainably. The term sustainable has been coined in many different ways.

According to the Environmental Protection Act of Hungary (Act LIII of 1995 on the General Rules of Environmental Protection): sustainable development is a system of social and economic conditions and activities, which

- preserves natural values for the present and future generations,
- uses natural resources economically and expediently,
- ensures an improvement to quality of life and the preservation of diversity in the long run from an ecological perspective.

We must also take into account that our environment, the world, is constantly changing. Our knowledge needs to be updated and expanded again and again so we can keep up with these changes, and find the right answers to the challenges. Learning never stops; we can never say that we know everything.

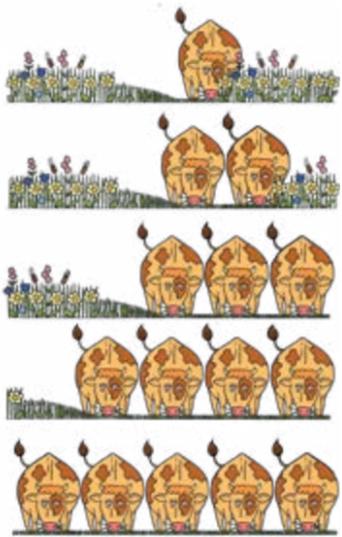


Backwater beside the Sava River in Croatia

### How (not) to ruin ourselves?

Let's look at the following revealing story.

Imagine a small village. The village has a common pasture shared by the local farmers. In our case, the cows are kept for the sole purpose of producing milk. Initially, 9 farmers have 1 cow each on the pasture, and each cow produces 10 litres of milk a day. At some point, one of the farmers decides to double the milk yield and puts another cow out to the pasture. Now there are 10 cows grazing in the pasture, each producing 10 litres of milk, which means that one farmer has double the income of the others.



As you might expect, another farmer thinks the same way, and he also puts out a second cow. However, now the farmers realise that with 11 cows, the grass is only enough to produce 9 litres of milk per cow. So the 2 farmers with more than 1 cow have 18 litres of milk each, but the others are already suffering a loss.

If the other farmers want to reduce their losses, they too will start grazing one more cow; in this case, however, the milk yield per cow will decrease as the number of grazing cows increases, until the pasture cannot regenerate at all. With no food, the cows will not produce any milk whatsoever, and the farmers will go bankrupt.

What would it have taken for this story to have a happier ending?

If the farmers had realised that

- the pasture provides enough nutrients to ensure the maximum milk yield for 10 cows, and that
- in a system with limits, there is no such thing as unlimited growth. This is true for all systems, be it a landscape or an entire planet. To make something work, i.e. to make it sustainable, you need to know the characteristics, limitations and potential of the system.

What could the farmers have done? When they first realised that the milk production was decreasing, thinking and cooperation should have overridden the momentary self-interest. Then a fairer, sustainable, collectively managed dairy farming system could have been developed, from which everyone would have benefited.



### BACK TO THE FUTURE!

It's been almost half a century since scientists modelled the future that is now our present. In simple terms, they said there is no such thing as infinite material growth in a finite area. To avoid the environmental, economic and human catastrophes we are likely to face, we will have to make tough changes to our consumption habits and the way we produce.

They also presented the scenario that leads to sustainability. In 2015, following scientific research and peer reviews, the 193 UN Member States adopted the 2030 Agenda for Sustainable Development. This includes 17 Sustainable Development Goals, broken down into actions.

We are proud that Hungary's then Ambassador to the UN was asked to co-chair the task force responsible for developing the set of goals. As a starting point, the task force examined the problems they identified as needing solved in the future, as if looking back from 2030.

They envisaged a future that focuses on people, the planet and prosperity, and ensures a decent, healthy and sustainable life for all. The tasks have been designed to ensure that, if they are jointly supported and delivered by governments and stakeholders, all the goals will be met.

The targets include the following goals:

- social (e.g. ending hunger, issues concerning health and education),
- economic (e.g. decent work, sustainable towns) and
- environmental objectives (e.g. combating climate change, protecting ecosystems).



#### YOUR TURN!

- Study the illustration and express what these messages mean to you. How would you explain them?
- Choose a goal, and figure out how it relates to the other goals.
- Discuss the question with others too. Ask for their opinion!

## ASK YOUR DOCTOR AND PHARMACIST.

Like medicines, many things have 'side effects'. When looking for solutions to something, the side effects, i.e. the risks, must also be taken into account. Einstein is credited with this hilarious quote, "For every problem there is immediately a wrong solution."

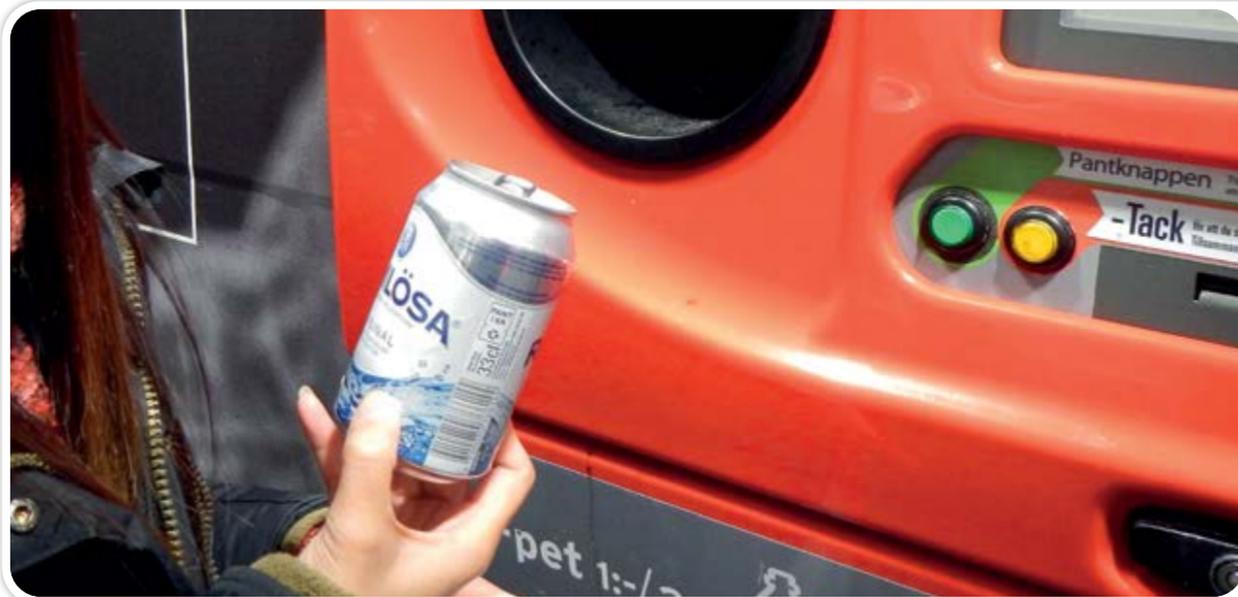
### Let's look at an example.

A local authority decided that, for environmental reasons, the amount of aluminium drinks cans needed to be reduced; can-collecting machines were installed for this purpose. They did not even consider the possibility of reducing the number of purchased cans by explaining to the local population why aluminium cans destroy the environment.

The most obvious place for collection was the nearby school, because it had a covered area where the machine was not in anyone's way, and the school could receive money for the collected cans. However, it was not possible to buy drinks in aluminium cans at the school.

*What was the result of this seemingly green and well-intentioned measure?*

As the canteen had unfortunately closed, the school's headmaster decided to install a drinks vending machine next to the collection machine, as he considered it really environmentally friendly if the children threw the cans into the collecting machine instead of into the general waste.



The deputy headmaster, a dedicated environmentalist, organised a competition among the classes. A prize was awarded to the class who collected the most drink cans. As a result, the students started bringing in cans from home and from their neighbours. The residents became enthusiastic and started buying more drink cans with a clear conscience. They were satisfied with themselves, as they were seemingly doing something for the environment, and the children got money and points for their involvement.

A nearby manufacturing plant took the hint and started producing more canned drinks, even though the percentage of recycled cans was only 60 percent, so 40 percent of them still landed in the rubbish. As production increased, so did the amount of aluminium cans ending up in the landfill.

### What are the lessons to be learned?

Nothing can be separated from the system, from the environment. The impact of a measure or action must be assessed in many different ways and from many different perspectives to achieve the goal we desire.

## FROM CRADLE TO CRADLE

The lifecycle of goods does not start in the shop or in our shopping basket, and does not end when the bin lorry takes them away. Their life is "cradle to cradle": raw materials come from the earth and waste ends up there too. So it matters how much raw material is needed and under what conditions it is produced, how long the goods made from it are used, how the materials used affect health, how much waste and of what quality is produced and where it is returned to.



Community gardens are on the rise too

You may think all this is none of your business; you buy whatever you find in the shop, and that's it. You're partly right, but we're seeing more and more examples of companies switching to green technology and recyclable materials based on consumer expectations, which often mean children. Supermarkets sometimes take a product, or even all of a company's products, off their shelves because of the harsh criticism these receive. The lesson to be learnt from all this is that it's worth considering the environment when shopping.

### The power of the community

In addition to individual responsibility, it is often helpful to work together and look out for each other. There are already many examples of this in Hungary. For example, at farmers' markets and handicraft markets the producer or the maker meet the customers directly, and the life cycle of the objects and foodstuffs can be explored.

In addition, the short distances involved in transporting make these solutions beneficial in terms of climate change. Not to mention that flea markets also help to extend the lifecycle of objects.

We have to recognise that we depend on each other and on our consumption. If we are careless and therefore destroy the environment, if we are driven by advertising and not by our real needs, this will have an impact on us, our families and our descendants.

If we only focus on ourselves, we will end up like the farmers and the cows.



### THINK, NOW IT'S YOUR TURN!

What could be the reason why mass production has changed our relationship to the objects we use? Why is it that when we buy something, we rarely think about how that object came to exist, from the initial idea to its completion, and how it got on the store shelves?

- One reason for this is that we have a large number and variety of goods at our disposal, and virtually everything is easily accessible. So we tend not to see them as valuable.
- Another reason is that we have lost our personal creative relationship with objects. Think how differently we value a drawing, a toy or a dress that we design and make ourselves! We take care of it, and don't part with it easily. Of course we don't, because we know about all the work, ideas and effort that went into making it.
- Think about the goods you buy as if you had a part in creating them.
- Make your own clothes, utensils, refurbish an old one, repair what you can!

## FLY, FLY, FLY AWAY!

Humankind's desire to fly goes back to ancient times. Perhaps that's why we find it so much fun to make something fly up in the air. Of course, a few moments of pleasure come at a price. A floating balloon, for example, can disturb birds, and the string can get tangled around their necks and legs. And the balloon will end up somewhere as plastic waste.

Many people initially loved to send up lanterns with burning candles instead of balloons. But this too turned out not to be a good idea, as the lanterns can cause fires. Sometimes butterflies are released. Butterflies and moths, if they are an alien species, cause problems in the ecosystem; if they are cabbage butterflies, it is interesting to see the faces of the farmers in the area. They probably won't be happy.



If you're desperate to release something into the air and watch it fly, then release a paper kite. We have heard of a case where a homing pigeon breeder lent his birds out for this purpose. There is no problem with this either, just make sure you always pay due attention to health and safety, including that of the pigeons.

The easiest solution, and one that can be done anywhere, is to follow the tradition of some universities where students throw their caps in the air. It really is just as uplifting!



## CAN HAPPINESS BE MEASURED? From research by economic experts

To round things off, let's talk a bit about how people's satisfaction and well-being are related to sustainability. There is an indicator called the Happy Planet Index (HPI), which shows how sustainably people in a country use environmental resources to live well. The HPI was introduced in 2006 by the New Economics Foundation, and it takes four areas into account:

- life expectancy,
- ecological footprint,
- wellbeing, and
- inequality of outcomes.



In recent decades it has become clear that, in addition to GDP, the most widely used economic indicator for measuring the development of countries, other indicators and comparisons are needed. Put very simply, GDP expresses the income and economic performance of a country over a given period. It is also often used to compare the living standards of residents, but it is becoming increasingly clear that the indicator, which has been in use for more than 80 years and is therefore the most widely used, does not even give a complete picture of economic development.

And it is certainly not a good measure, for example, of the quality of life of people, how efficiently a country uses its resources, or how sustainably it operates.

### Life expectancy and ecological footprint can be expressed in numbers, but how can we measure wellbeing and inequality of outcomes?

Life expectancy is measured in years, ecological footprint in hectares. However, with the HPI, people's quality of life is measured by objective and subjective factors. Two questionnaires are used: a simple one that collects data, and one that looks at how people feel. In the latter, the quality of life is measured mostly by answering questions such as: "Overall, how happy do you feel?" or "Overall, how satisfied do you feel?" or "Overall, how satisfied are you with your life?". Inequality of outcomes shows how much variation there is in life expectancy and wellbeing scores within a country. This value is expressed as a percentage.

#### Interesting rankings

According to 2017 data, Costa Rica had the highest HPI, with a life expectancy of 79.1 years, wellbeing of 7.3 and an ecological footprint of 2.9 gha/person. The country was not as high in the GDP ranking, as it was only 58<sup>th</sup> on the International Monetary Fund's list.

By contrast Luxembourg, which tops the GDP ranking, is the penultimate country in the HPI list in 139<sup>th</sup>, with an ecological footprint of 15.8 gha/person. Norway is a high performer on both lists, coming 12<sup>th</sup> in the HPI and 3<sup>rd</sup> on the GDP list. The bottom countries are generally from the African continent.

*Where does Hungary stand? What is our position in the world rankings for GDP and the HPI?*

Hungary is in the top third of both lists. In terms of GDP, we are the 47<sup>th</sup> most developed country in the world, but in terms of HPI we are a little lower, in 69<sup>th</sup>: 74.9 years of life expectancy, 4.7 points for wellbeing and an ecological footprint of 2.9 gha/person. We would like to improve this ranking in the future.

*So is HPI really a more accurate measure than GDP?*

No, it does not measure more accurately, it just measures different things in different ways. It takes different factors into account. To make decisions about our future, we need to measure the sustainability of development alongside indicators of economic development. Developed countries have set themselves the goal of reaching 87 points on the HPI scale by 2050 – which means that life expectancy should reach 87 years, wellbeing should reach 8 out of a maximum 10 points, and last but not least, they aim to reduce their ecological footprint to 1.7 gha/person. Another goal is to help less developed countries achieve the same result by 2070.



### IF IT'S GOT A HOLE, FIX IT!

The first fridges used toxic or flammable materials that posed a direct risk to their owners, and therefore later, from the 1950s, these materials were replaced by a substance called Freon gas.

It was thought that this solved the negative impact on health posed by running a refrigerator. But we know that there are problems in the world that we do not perceive directly and immediately. Moreover, a solution in one place can cause other problems elsewhere.

*What was wrong with Freon gas?*

At that time, it was already known that the ozone layer plays an important role in filtering out harmful UV radiation, so care must be taken to prevent substances depleting the ozone layer from reaching the atmosphere. In the 1980s it was discovered that these gases had migrated up to 25 kilometres or more into the atmosphere and what was feared had happened: the ozone layer over the Antarctic Circle had thinned to what is colloquially known as the ozone hole.

To stop this, in 1987, UN member states adopted the Montreal Protocol on Substances that Deplete the Ozone Layer, in which the signatory states committed themselves to reducing or eliminating the production and marketing of ozone-depleting gases. And lo and behold! The ozone layer has started to recover.



### What are the lessons to be learned?

Let's look at an example from everyday life. Andrew is preparing for a power hike, so he wants to increase his stamina. His trainer recommends that he runs 5 kilometres a day. This is a healthy amount for Andrew's age and fitness level, so it may seem like a reasonable workload.

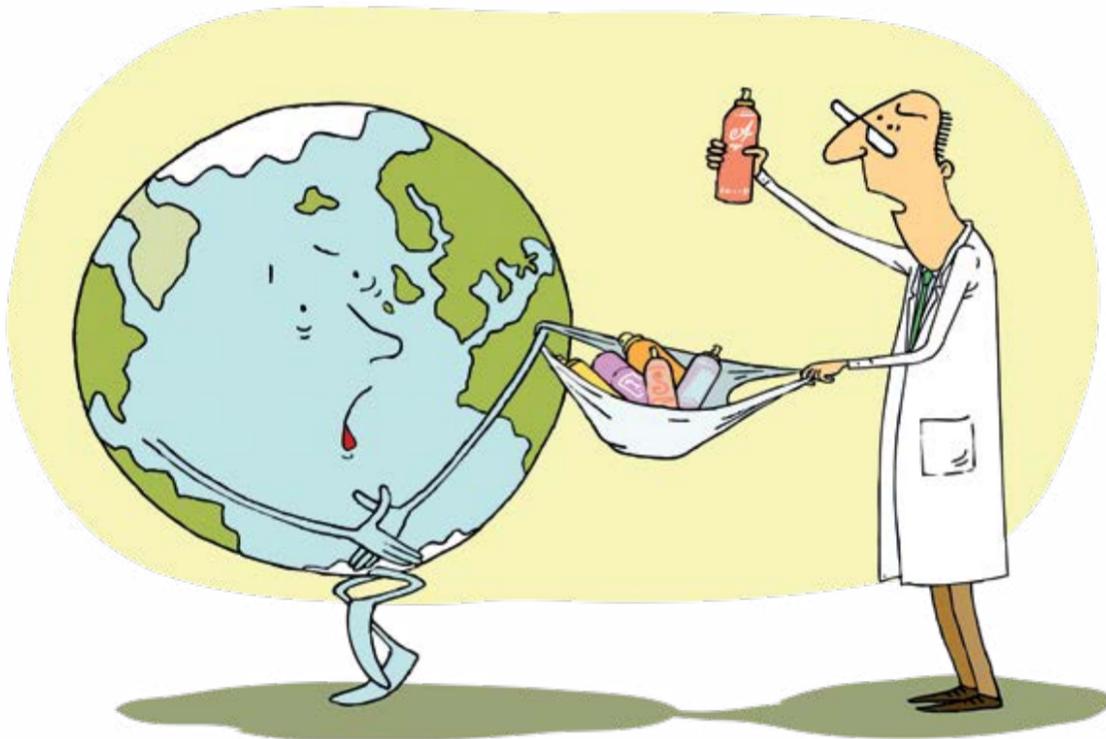
However, the trainer didn't take into account that Andrew lives in a high traffic area and doesn't bother to go to the nearby riverbank, so he breathes in the exhaust fumes from cars every day. That is, until his doctor finds out and explains to Andrew that as much as sport can be good for him, it is just as harmful under the given conditions.

### What does it take to solve a problem without creating other ones?

- A planned solution must be preceded by thorough preparation and impact assessments.
- It is worth involving helpers and experts in different fields.
- The solution should be tested, and if it turns out that we have got it wrong, it should not be covered up but corrected as soon as possible.

This is true whether you are fixing a tap at home, or whether a unit of a nuclear power plant breaks down.

So now you think that the scientists have breathed a sigh of relief and leaned back, don't you? Well, no. Because it turns out that, although the ozone layer is regenerating, the newer gases applied to protect the ozone are a major contributor to climate change. So they have added to the treaty the requirement to replace ozone-depleting gases with climate-friendly ones, which finally seems a reassuring solution.



### DR. CATTLE

The staff of the Centre for Ecological Research conducted a study to see how to reduce the amount of species over-growing on pastures (such as sedge and reed) or even non-native invasive plants (such as the pagoda tree). They found that cattle relate to plants in very different ways, just as we humans relate to our food. They can tell them apart; there are some they like, some they eat but don't seem to care about, and some they leave in disgust. The study involved herders.



Good herders not only know but can also influence the 'taste' of cattle, so that when they are herded, cattle will eat plants that they might have skipped on their own.

By herding the cattle to the right places, the herdsman can create a 'menu' that is both beneficial to the cattle's growth and to the maintenance of the pasture.

In several countries, including Hungary, there are already so-called conservation herders who, in cooperation with conservationists and researchers, are a great help in maintaining areas of land.



### GIANT FLEAS AND GIANT ANT TERMINATORS

Dear Editorial Team,

I find it very fascinating whether it is possible for various living things to outgrow their present size.

For example, could a flea grow as big as an elephant? If yes, how high would it jump, and what would this depend on?

Many thanks,  
Berci Bokros  
Székesfehérvár



Four horizontal lines for an address, with the first line starting with a vertical line on the left.



Dear Berci,

Don't think you are the only one who is interested in this question!

British scientist J. B. S. Haldane wrote a paper on the subject in the early 20<sup>th</sup> century. He proved that there is an optimal size for all species, and if this were to change, their shape would not remain the same. An 18-metre-tall man would have to be ten times as wide and thick to function, which would mean that his weight would be between 8,000 and 9,000 kg. But his bones would not be able to carry a proportionately greater load, so they would break all the time.

*What if a flea was the size of a human?*

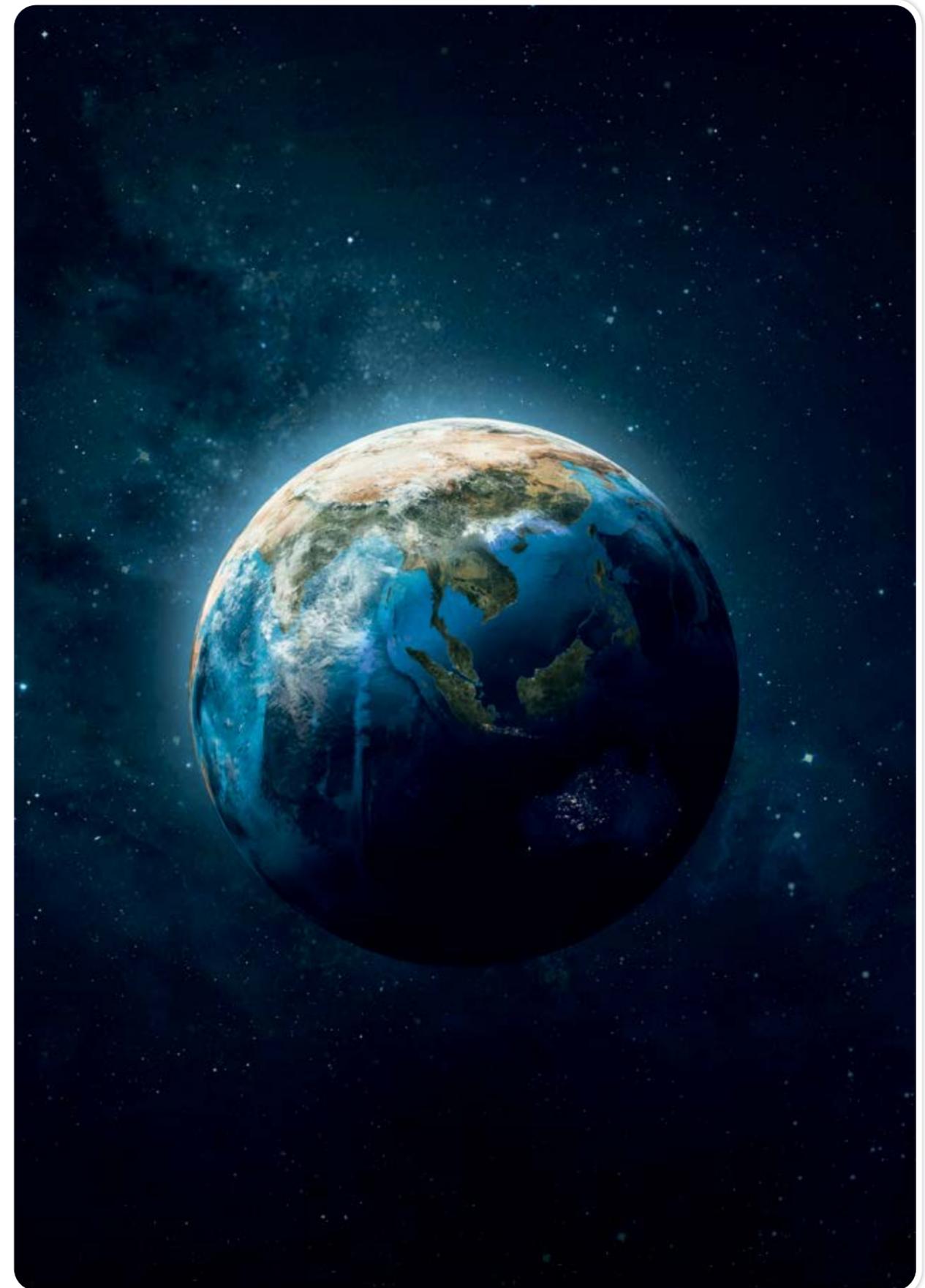
Would a human-sized flea be able to jump 305 metres high, which corresponds proportionally to the height a normal-sized flea can jump? We can reveal all: no. This is because how high a body can jump depends not only on its size, but also on the resistance of the air and the energy expenditure in proportion to the weight of the jumper. Moreover, the poor flea's muscles are rather stunted, so the result would fall far short of expectations.

*What's the point of being large?*

A larger animal has a smaller surface area compared to its body weight, which helps keep its body warm. The amount of food the animal needs is adjusted accordingly. A mouse eats a lot, consuming a quarter of its weight a day to keep its tiny body warm. It's no coincidence that animals tend to be larger in colder climates.

The living world is an excellent example of the fact that there are limits to growth. Both internal and external limits. The same is true for the economy. A finite amount of raw material can produce a finite amount of product. We have one Earth, we live on it, and the water, soil and raw materials here are finite. So if we want to enjoy its hospitality for a long time, we need to manage its resources in a sustainable way, to remain within its capacity to sustain us. Keep exploring! You will find many interesting facts on this.

Best regards from the Editorial Team





# Naturally is best!

## Conscious nature conservation



### CONTENTS

- VELCRO AND GPS
- TROLLS IN NATURE
- BEE HOTEL

### YOUR INTEREST, YOUR LIFE

It's natural to eat and drink, walk in the fresh air, have electricity in your home, and turn on the heat if you're cold – isn't it? How terrible does it feel when the power goes out for ten minutes, the TV doesn't work, or the internet is down? What if you had to give up your comforts not for ten minutes or a few hours, but for much longer?

#### Where do we get our food from?

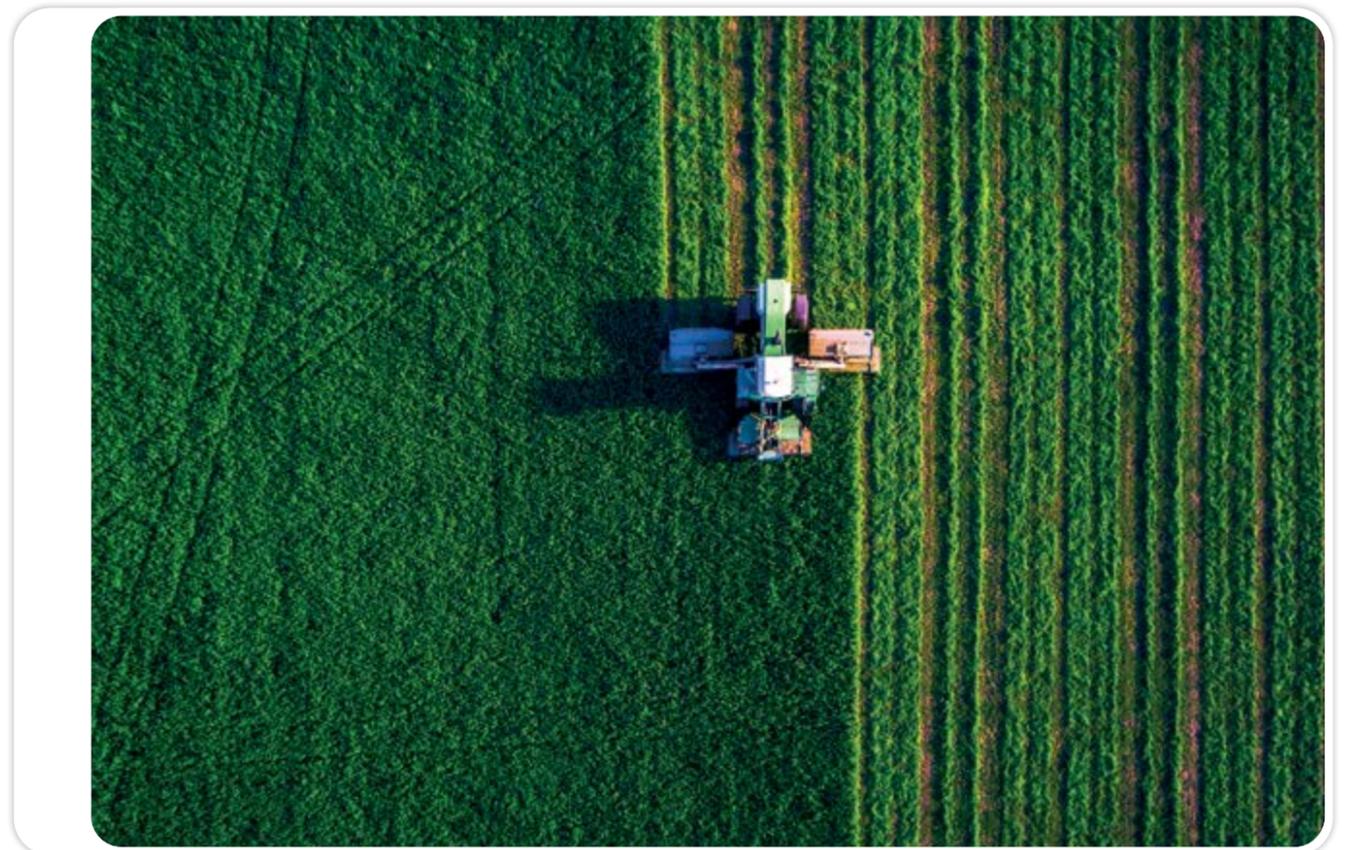
- from plants
- from animals – we get meat, dairy products and eggs from animals that feed on plants or other animals.

#### And what about our drinks? Water, which you drink

- either in its natural state, or
- flavoured, or
- in the form of fruit juice, or
- in the form of milk produced by farm animals.

If you like hiking or doing farm work, then this is obvious for you. If you live in a place where you have almost no connection with the land or with nature, you still depend on it, you are linked via a thousand threads, whether you like it or not.

So we get the necessities for everyday life from nature, but its reserves are finite. The worrying phenomena of recent decades – climate change, floods, droughts, forest fires – have highlighted that natural habitats for animals and plants are dwindling, and that we humans are also in danger. What is more, this danger is not something that will only occur in the distant future if we are not careful. How can we protect wildlife and our cultural assets linked to nature?





STOP!

In 1965, a British researcher, James Lovelock, was investigating whether life could exist on Mars. One of the aims of the research was to answer questions about the origin of life on Earth. This resulted in the so-called Gaia hypothesis. According to this theory, living organisms interact with their inorganic surroundings to make their own habitat as ideal as possible and to maintain it. Thus he proved that nature can sustain itself. And we as humans must ensure that the conditions necessary for quality human life are maintained.

One way to protect the living environment is to create and enforce laws. In many countries around the world, including Hungary, it has been recognised that natural values are so endangered they need to be protected by legislation. Such include:

- soil, air;
- water: springs, streams, rivers, lakes;
- plant species, plant communities;
- animal species and their habitats;
- geological formations such as mineral and fossil deposits, caves;
- our cultural heritage: traditions linked to farming and lifestyle, domesticated animal species, etc.

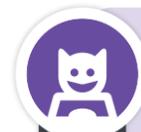
Anyone who breaks the law can face criminal penalties, including fines and imprisonment. But legislation is not enough to create a liveable world for ourselves: we can and must do a lot ourselves to preserve the health and balance of our natural environment. You can read about this and many more interesting things in this magazine.



### SO SHOULD WE TRAVEL OR NOT?

Tourism has become one of the most profitable sectors in recent years. It is forecast that international tourism could top 1.8 billion people by 2030. There is no question that the movement and transport of so many people will place an environmental burden on destinations, host countries, and ultimately on the planet as a whole. This huge number of people have to get to their destination, but a massive amount of waste is generated during the journeys.

In 2019, the SARS-CoV-2 coronavirus triggered a global pandemic from Asia, causing a temporary halt to tourist travel around the world. Many studies and articles have been written about the positive and negative effects of this event.



YOUR TURN

#### THINK, NOW IT'S YOUR TURN!

- Find out how the reduction in travel during the pandemic affected air quality, greenhouse gas emissions and wildlife.
- What is the relationship between these processes, and how has it changed over time?
- Make an overview diagram (infographic), and share with your classmates and on social media.

Despite an increase in the number of climate-conscious travellers who do not fly to their destination, airports still experience a significant increase in traffic during the summer months. Below are some interesting stories about how the environment is connected to tourism.

#### ROBERTO (42) IS THE MAYOR OF A SPANISH TOWN

Tourists arrive seasonally and bring significant revenue to the town. They are important to us. We have tourists from Great Britain and Sweden, but also from Spain. In the summer months, the population of the town multiplies, which our utilities (wastewater, waste disposal) have to cope with, and the service industry (e.g. restaurants, cafés, hotels) has many times more visitors than during the off-season. We have to spend much more than usual on public safety and keeping our streets and squares clean. Our campaign entitled "The sea begins here!" aims to make seasonal residents aware that what they throw or pour into the street drains that collect and drain rainwater all ends up in the sea – and we all bathe in the sea.



**ALICE (74) IS A PENSIONER LIVING IN A HISTORIC TOWN IN CROATIA**

I grew up here, and the town has always been a nice and quiet place. Tourists used to come, take peaceful walks around the area and swim in the sea. We used to get together in the evenings, for a chat with friends and guests on the terrace. Ever since the resort complex was built the pedestrian street has become crowded, you can't take a walk during the day because of the temporary market stalls, and you can't sleep at night because of the rowdy, drunken foreigners. Yet I think many people are still looking for the old atmosphere of the city, but in vain. That's exactly what disappears because of the masses of people.

**RÉKA AND PETER (25) HIKE IN THE SZALAJKA VALLEY IN HUNGARY**

We love hiking in the Bükk hills and exploring what the local area has to offer! We always choose Sunflower-branded accommodation because they are friendly and benefit both the locals and us. We stay at Ms. Klári's house, and we know that the ingredients for a lot of the food we are served are produced in the village. Yesterday we hired mountain bikes and rode up to the lookout; tomorrow we'll have a look around the fair. Afterwards we'll either visit the caveman park or go on a horse-back ride. Or maybe we'll end up going geocaching.

**BERNARD (18) IS A STUDENT WORKER IN FRANCE BY THE OCEAN**

Last summer I worked for the local government for a month. We cleaned the beach. We were out at dawn with a backhoe, a tractor and two other student workers. We covered a 15-kilometre strip of sand each day. We collected bagfuls of leftover bottles, half-finished sandwiches, ice-cream cups and single abandoned flip-flops. Behind us, and to clear the beach of smaller debris, the backhoe picked up sand which was then passed through a sifting-sorting machine. The sand was returned to the beach, and the rubbish – which included everything from cigarette butts to bottle caps – was loaded onto the truck. We collected three to four truckloads of rubbish every single day. Quite unbelievable! The local government is said to spend 20,000 euros every summer on collecting rubbish.

**WHAT IS A FOREST ANYWAY?**

A forest is not simply a collection of trees, it is an ecological system defined by trees, which includes

- diverse undergrowth,
- soil with a rich biota,
- animals,
- fungi,
- all elements of the food web.



What is considered a forest is often a matter of debate. Some argue that even a group of planted acacia trees with poor undergrowth is a forest (this is highly controversial, as many consider it to be a mere plantation of trees), but a primeval forest without human intervention for centuries is also a forest. Like all natural ecosystems, forests survive without human intervention!

**Immerse yourself in the forest!**

Forest immersion, also known as forest bathing, is a Japanese-style relaxation or personal development programme, usually enhanced. It is primarily designed for those who want to delve into and experience the peace and quiet of the forest. It is an excellent way to manage stress and recharge your batteries. Of course, not only a forest is suitable for this kind of relaxation, but also a babbling brook or a meadow full of wildflowers, if you pay attention to the colours, sounds and smells.



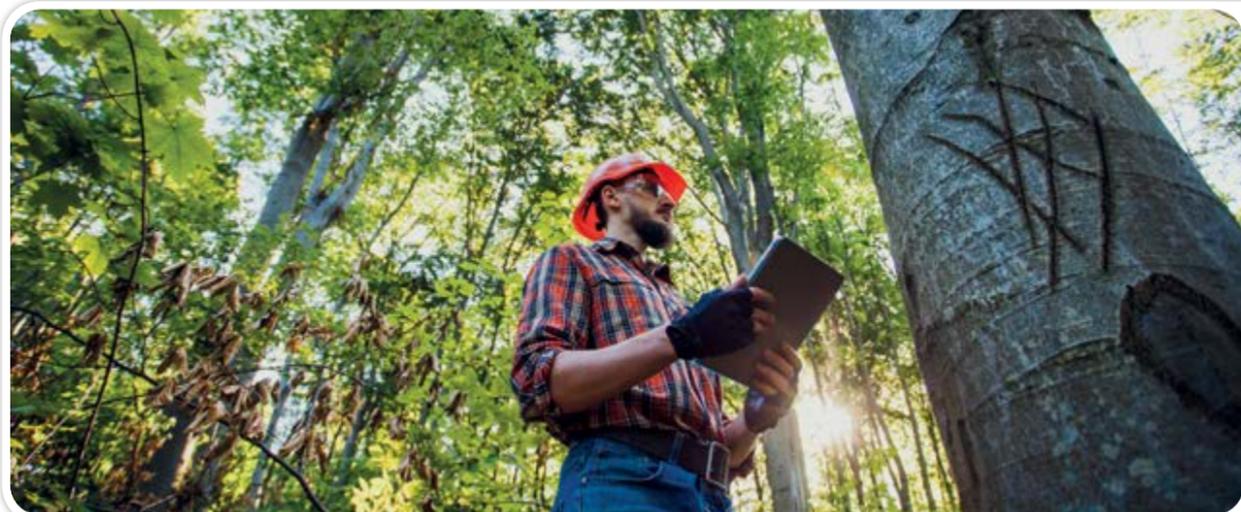


### FIND OUT!

- Why can plantations of trees of the same species and of the same age be problematic?

In November 2004, powerful gales on the southern side of the High Tatras brought down about 3 million trees. The devastation was partly due to the fact that the planted trees were the same age, and mostly belonged to the same species. So diversity of species and different ages of trees are important in afforestation.

A single-aged forest made up only of beech trees planted on a clearfelling site is more vulnerable (to windthrow for example) than a forest managed by selection cutting, where the age and composition of the trees is diverse because mature trees are harvested by themselves or in small groups. This ensures that the area remains permanently forested. Tree communities of different ages and species provide a habitat for a much wider range of organisms and ensure the possibility of natural regeneration.



Preserving and maintaining biodiversity is a primary consideration in sustainable forest management plans. Biodiversity, i.e. the biological diversity of species in a biocenosis, results in diverse species interactions and a self-sustaining network of the area. The interdependence of living organisms can be observed in all ecosystems. The more diverse the species composition of a habitat, the more stable and healthy it is. There are around 100 tree species in Hungary's forests (the world record-holding Malaysian rainforest has 1,175 species per half square kilometre); their genetic diversity and different ages ensure that a balanced system is maintained.



**We all have a responsibility to maintain habitat diversity. We can do this primarily by conserving natural habitats. Not only professionals, but anyone, including you, can do a lot to achieve this.**



### YOUR TURN!

- What plants and animals live in natural habitats near you?
- Find out if any of them are particularly endangered or protected species.
- Contact your local government, conservationists and NGOs, and ask what they are doing to protect the natural habitat and the biodiversity of the area; get involved in their work if you can.

Hungary and the Carpathian Basin have abundant biodiversity enriched by many species that are not found anywhere else – these are called indigenous (endemic) species. Such species include the Pilis flax or the European copper skink.



European copper skink



Pilis flax

There are more and more news reports, photos and amateur videos of lynxes, wolves and sometimes bears appearing in our forests.



### Who's afraid of the big bad wolf?

Lynxes and wolves have stable populations in the more isolated areas of Börzsöny, Bükk and Zemplén mountains, but brown bears from the Carpathians occasionally also cross the border, and sometimes stay for a while. Lynxes and wolves are particularly wary of human company, and there is very little chance of seeing one on a hike. And brown bears do not resemble the friendly Yogi who steals picnickers' lunch for fun. They are omnivores, and once used to easy access to food, they return regularly to raid rubbish bins. While on a hike, it is recommended to signal your presence by talking or singing, and there are also bear bells specifically designed for this purpose. When pitching a tent, it is important to keep food and food waste out of reach, preferably in a bag tied to a tree. It is also possible to coexist with the highly adaptable bears by storing municipal waste in enclosed areas, protecting domestic animals (electric fence, large dogs) and harvesting fruit from trees in good time.



### FIND OUT!

- How do we co-exist with bears?
- Search and study the infographics on the WWF Hungary website on how to co-exist with bears.
- Share the information with your classmates.
- Make an overview diagram (infographic), and share with your classmates and on social media.

### Why is the presence of large carnivores important?

In a well-functioning biocenosis, these animals are the ones that prey on damaged, weakened, overgrown herbivores, thus helping to keep their numbers in check and promote plant regeneration. So the solution to the wildlife problem is certainly not shooting them or removing individual specimens, but rather learning to co-exist with them.



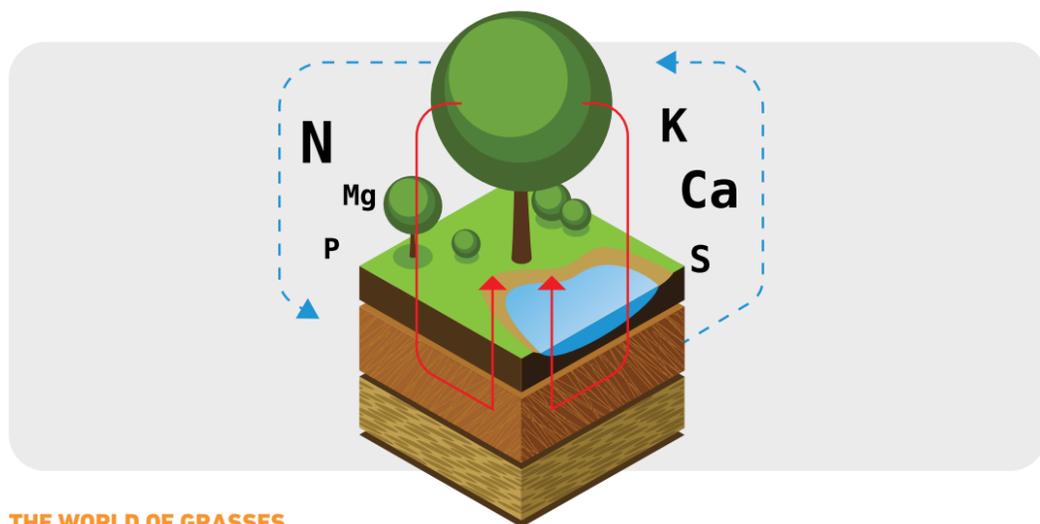
### YOUR TURN!

While hiking in May and June, you may find a baby deer on the ground. But the little deer is not an orphan, it has just been laid down by its feeding mother, who has wandered off because of the disturbance. It is strictly forbidden to pick up, pet or feed the baby deer, as you may damage its natural habitat. Leave the deer untouched, as the mother deer will soon find her way back!

### ZERO WASTE IN THE FOREST

Nature's self-sustainability and regenerative capacity are demonstrated most remarkably by the fact that everything is in circulation, and no superfluous waste is produced. We humans could learn a lot from nature's example! In temperate forests, 4.5-15 tonnes of organic matter – such as fallen leaves and animal remains – are produced per hectare each year. (By comparison, in tropical rainforests, 30-40 t/ha of biomass is deposited on the soil.)

However, we do not see all this matter accumulate because decomposing organisms first convert it into humus-rich forest soil, and then convert the organic matter in the soil into carbon dioxide, water and inorganic minerals. This process ensures the cycling of materials and the nutrients needed by plants. The decomposed matter is used to raise the young generations of the forest.



### THE WORLD OF GRASSES

Grassland is a specific plant community with a diverse and characteristic species composition dominated by herbaceous plants, mainly grasses. Yet it matters who is talking about the grass. To a golfer, grass is a carefully mown green lawn. Gardeners use a 'flowering lawn seed mix' to create a lawn that contains not only a few grasses, but also flowering plants that provide food for pollinators. To the ecologist or conservationist, a typical plant community of a saltmarsh or dolomitic rock is also a grassland of conservation value, as are the dense meadows of rain-soaked hillsides.

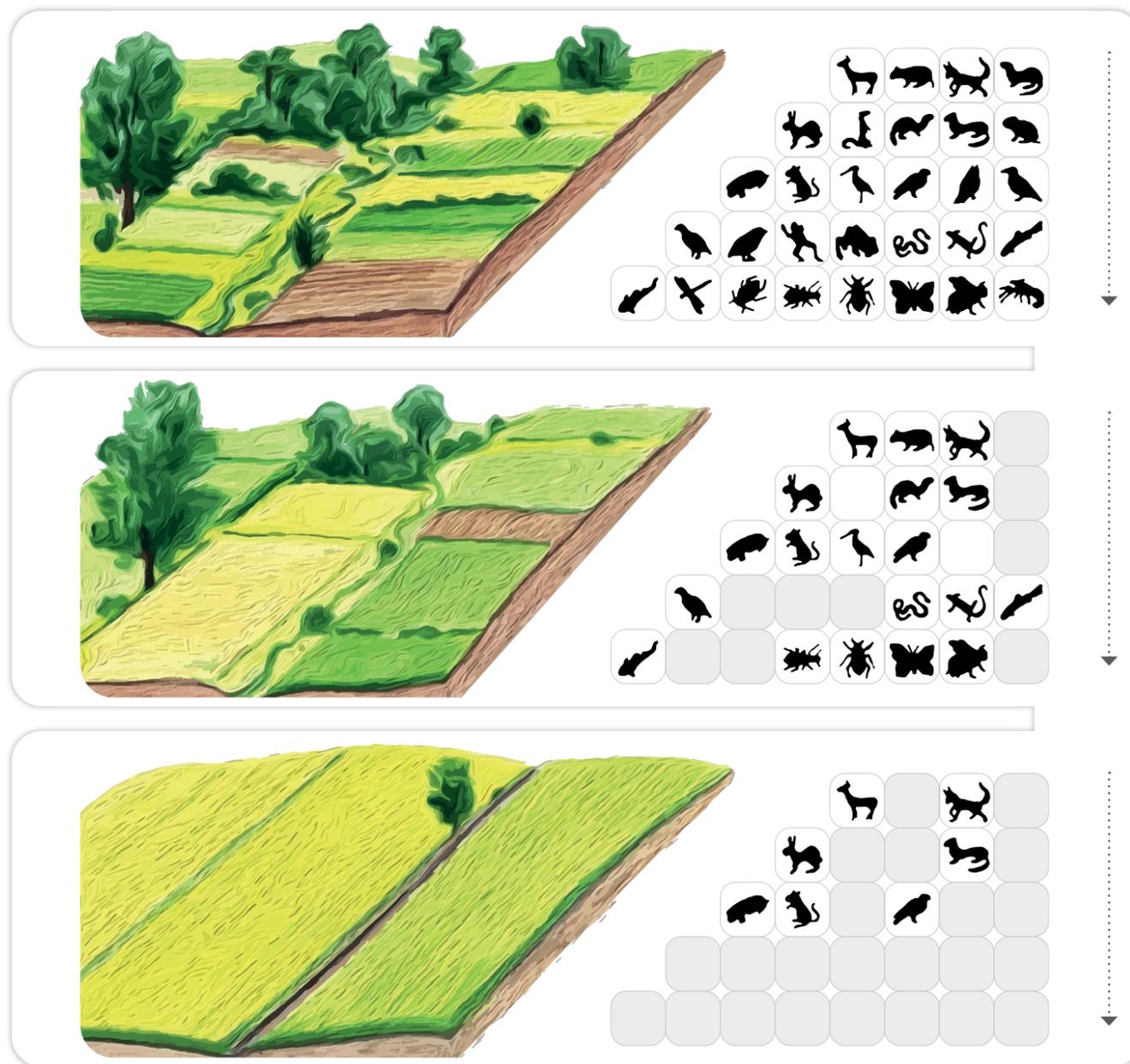


### The role of grasslands in climate protection

Grasslands contribute to climate protection too by sequestering the greenhouse gas CO<sub>2</sub>. Unlike trees, grasses store most of the carbon sequestered underground, so this 'carbon store' is much less affected by extreme conditions such as droughts or fires. More natural plant communities with higher diversity have better sequestration capacity and are more resilient to the effects of climate change than damaged areas, which are often penetrated by a high number of alien invasive species.

### Disappearing grasslands

In our climate, temperate natural grasslands contain so many species that their biodiversity is comparable to that of rainforests, and yet they do not receive sufficient attention and protection. Over the last century and a half, more than 70 percent of Hungarian grasslands have disappeared, while the quality and species richness of the remaining grasslands have declined. In addition to agriculture, urban development, the development of technical and other infrastructure, the spread of invasive species and ill-considered afforestation programmes have all contributed to the loss of grassland.



### Pannonian grasslands

Hungary has the most diverse grasslands in the European Union. There are many types of grassland, including:

- sandy grassland,
- saline grassland,
- wooded grassland,
- floodplain meadow,
- upland pasture,
- mountain meadow.

These specific plant communities are typical to our region and are therefore called "Pannonian grasslands". Their conservation is our responsibility!

### Typical plant and animal species of grasslands

These animals and plants are specially adapted to grassland conditions, they do not find what they need to thrive in other habitats. Here are some of the most typical of these species in our country.



Turkish marsh gladiolus



Stipa species



Tatarican colewort



Nodding sage



Lycaenidae species



Partridge



Hungarian meadow viper



Viviparous lizard



Corn crane



Red-footed falcon



Saker falcon



Eastern imperial eagle



Ground squirrel



Steppe polecat



Mole-rat species

### Pollinators and our breakfast

From all the organisms associated with grasslands, the insects involved in pollination are particularly noteworthy: in Hungary there are roughly seven hundred species of wild bee, most of which live in grassland areas. Their role in food supply and fruit production, among others, is indisputable.



Breakfast with pollinators



Breakfast without pollinators

Source: elena-project.eu



#### YOUR TURN!

You can do a lot to protect pollinators. You can help them breed by building bee hotels, which you can make yourself by tying together reeds of different thicknesses or by punching holes in a slab of wood. You can help them feed by planting or leaving flowering native plants (think of this when mowing the lawn for example).



Illustration: Márton Zsoldos



Cultivating on small plots of land, bordered by shrubs and trees, provides a natural link among various areas with higher diversity. In such places the animals can move more freely, pollinators can find food, and many of us consider them more beautiful too. Decide for yourself! And if you ever find yourself in a situation where you have a say or a choice, then don't forget to weigh up this aspect as well.

### GOOD TOURIST, BAD TOURIST

Some regions or towns live off the people who visit, so they look forward to the tourist season, but they also worry about it because with tourists come problems that need to be addressed.

What kind of problems? – you might ask.

Visitors eat in local restaurants, shop in local shops, and stay in local accommodation. The revenue is used to support local residents, and it's also used for development. What's the problem with this?



#### FIND OUT!

- Before you read any further, discuss with your classmates where the problem might lie.
- What can the downsides of tourism be?

FIND OUT!

*Think it through!*

The given area experiences a massive surge in the number of people living there relative to the local population. Visitors have to find a way to get there, and the energy demand of travelling itself is high. But the pollution doesn't stop when the guests get off the plane. There is also growth in the number of people using local transport, and... And what else grows?



*For example:*

- litter: the amount of waste that needs to be taken away, which is often not collected separately by people on holiday;
- the environmental impact of hotels, restaurants, shops and entertainment: the destruction of the natural environment due to the space needed for service facilities;
- the carbon dioxide load due to the energy demand of investments;
- noise and light pollution, other pollutants that damage the ecosystem;
- water use and associated wastewater treatment needs;
- the carbon footprint from energy consumption and emissions of other pollutants.

### The snake biting its own tail

Tourism operators themselves are responsible for damaging the environment, and also for minimising the damage. On the one hand, new hotels and other investments consume additional valuable green spaces, and the carbon footprint of construction and investment is also significant. On the other hand, running institutions and services as well as transporting goods requires additional resources too. These also create significant greenhouse carbon dioxide emissions if the institution has not been designed to operate in a sustainable, environmentally friendly way.

Tourism often destroys the very thing it was created for. For example, a row of hotels built on the waterfront obstructs the view of the mountains in the area, or the shore becomes inaccessible. Even though this is what used to attract visitors. Waste that is not collected and treated properly, or not at all, damages the soil, the water and the wildlife, not to mention the fact it is disgusting to look at.

### The local ecosystem is at risk



#### FIND OUT!

Before reading on, think back to your previous studies or look up what we call ecosystems!

FIND OUT!

The increasing impact of tourism is threatening the adaptive capacity of local ecosystems. This means that a weakened environment is less able to adapt to a drought or sudden storms, and its destruction, the disappearance of the natural vegetation, further accelerates climate change as well as increasing negative environmental impacts.

Freight and visitors from different countries around the world, unwittingly, can also bring in a variety of pathogens and invasive species, either as well-intentioned colonisers or through negligence.

#### Would you have guessed?

Some seeds stuck to clothes and shoes do not become unviable even after the clothes are washed and dried. They remain stuck on fuzzy fabrics and cotton materials the longest; so if you're in a valuable natural area, you should wear water-repellent clothing zipped up to reduce the chance of spreading invasive plants.



STOP!

Invasive species are non-native animals, plants and fungi in a certain area that spread and multiply so rapidly they displace the species that originally lived there, thereby possibly upsetting the ecological balance, the ecosystem. This ecosystem disruption can cause long-term damage to both the natural and human environment.

WHAT CAN WE DO TO PROTECT NATURAL HABITATS?



For example, forms of ecotourism, or in other words 'gentle tourism', should be promoted. Gentle tourism takes care of the environment, while at the same time bringing economic benefits to the local population. We could also say that gentle tourism

- maximises the benefits of tourism (valuable experiences, learning about local customs, ensuring that wildlife is not disturbed, minimising waste production, respecting rules);
- and minimises its burdens.



BE A GENTLE TOURIST IN YOUR OWN COUNTRY!

In Hungary, among other things, ecotourism offers experiential learning, visits to demonstration sites, visitor centres and nature trails, which also ensure the presentation and undisturbed preservation of strictly protected assets as well as plant and animal species. In Hungary, the centres of ecotourism are mainly located in the areas belonging to national parks, where not only living but also geological values are protected.

We present two exciting areas below.

Find them on the map, or look for photos online.



The Bakony-Balaton Geopark, established by the Balaton-Highlands National Park, includes the basalt slate witness hills of the Tapolca Basin and the limestone gorges of the Bakony. One of the main aims here is to provide high-quality geological information. To this end, the Geopark organises field guide training for each landscape unit, and advertises the tours of its guides on its own website.



Lake Tisza is an artificially created body of standing water, which has become an important aquatic habitat. Conserving this habitat is supported by the tourism services developed to attract visitors who are committed to preserving the environment.



The ecotourism services include a visitor and demonstration centre, a cycle path around the lake, accommodation for water tours, and a white-water rafting course alongside a fish ladder.



YOUR TURN!

- Create an advertisement to promote gentle tourism. It can be an animation, a video, a photomontage, or made on paper.
- Show your work to the others.

## DOWNLOAD, AND RECHARGE YOUR BATTERIES – IN NATURE!

Hiking is fun! People who spend at least two hours a week in a natural environment, even in an urban park, feel they are healthier than those who don't.

Before you go hiking with your family or friends, it's good to prepare yourself thoroughly. Besides packing sandwiches, a water bottle and an anorak, it's also worth downloading some free apps to your phone to help you get to know the creatures you might encounter on the hike.



### The most important thing, of course, is not to get lost!

So the first step should be to download the *Hikers* app of the Hungarian Hikers' Association.

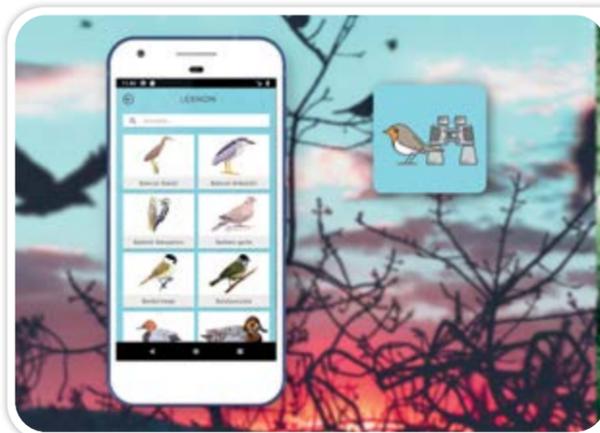
Here you can choose from countless routes, and even start the National Blue Trail. This is the longest, continuous, signposted hiking trail in Hungary, which is a real challenge to complete, as it is 1,165 kilometres long and is recommended to be covered in 27 stages.

The app includes attractions, accommodation and other useful information, as well as the length, duration, difficulty and altitude difference of the route you choose. As well as hiking tours, you can also choose cycling and water tours, and even the country's small railways!

Wandering in nature you're quite sure to encounter a wide variety of songbirds and birds of prey. The *Bird Identification* app of the Hungarian Ornithological and Nature Conservation Society (MME) will help you identify them.

You may not see the larger creatures of the forests or fields on your way, but you will see their tracks.

To find out exactly what animal was there before you – deer, rabbit or wild boar – you can get help from tracking and plant recognition apps.



## A GIFT OF WILDFLOWERS?

Have you ever lain in a meadow full of poppies and wild flowers? Have you walked along a path beside purple flowers under the trees? If your answer is yes, you know how uplifting it is. It would be nice to share that experience with someone who isn't with you. It might be tempting to at least take a bunch of flowers with you.

### But don't do it!

For one thing, wild flowers wither quickly, and they are beautiful exactly where they are. But also, as a gift they can turn out to be quite expensive. Many flowers and plants are protected or specially protected because their occurrence in nature has diminished. Picking them can result in fines of tens or even hundreds of thousands of forints because of their extremely high nature conservation or nature value. Nature value is a measure expressed in monetary terms. Even though it is expressed in forints, it is not the same as the price because anything with a nature value is not for sale. Nature value is a yardstick that helps to establish the extent of the damage caused, but even more so to discourage damage. Taking photos, on the other hand, is not forbidden, so create and send a virtual bouquet!



DID YOU KNOW?

Did you know you could even go to jail for picking protected plants? This can happen if the value of the destruction amounts to at least double the highest monetary value of the specially protected plants? The prison sentence can range from 1 to 5 years! Is it worth it?

If a plant or flower is in a protected natural area it is forbidden to touch it, even if it is not a protected species. In such cases, the entire wildlife of the area is protected by law. So if you want to collect wild garlic then keep well away from national parks!



Narrow-leaved narcissus



Spring pheasant's eye



Hill violet

## PROTECTED PLANTS



Dogtooth violet



Crocus heuffelianus



Snowdrop

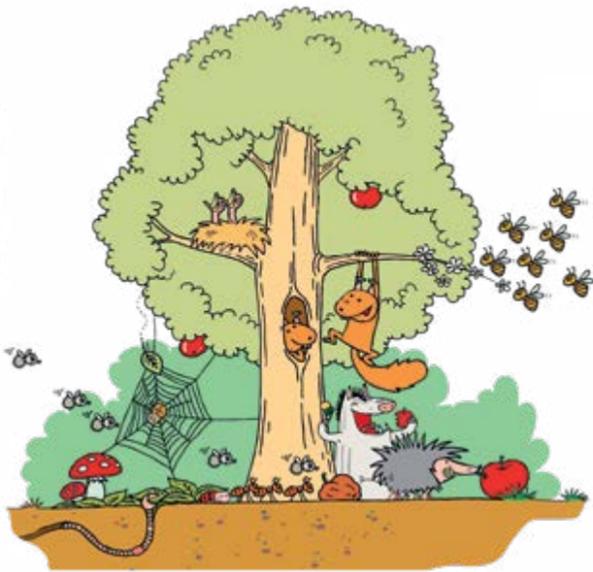


STOP!

According to the Central Statistical Office, there are nearly 3,000 plant species in Hungary. 733 of these are currently protected species, 87 of which are specially protected. When you are out in nature, look out not only for protected plants and animals, but for all living creatures! For more information and official data, visit the official website of the Hungarian Nature Conservation Service at [www.termeszetvedelem.hu](http://www.termeszetvedelem.hu)

## SERVICES OF THE ECOSYSTEM

When ecosystems (e.g. a forest, a river with floodplains, the ocean, soil) are healthy, they provide services that are beneficial to humanity. We tend to forget this, taking drinkable water, clean air, fruit that grows after pollination, roads protected from landslides, etc. for granted.



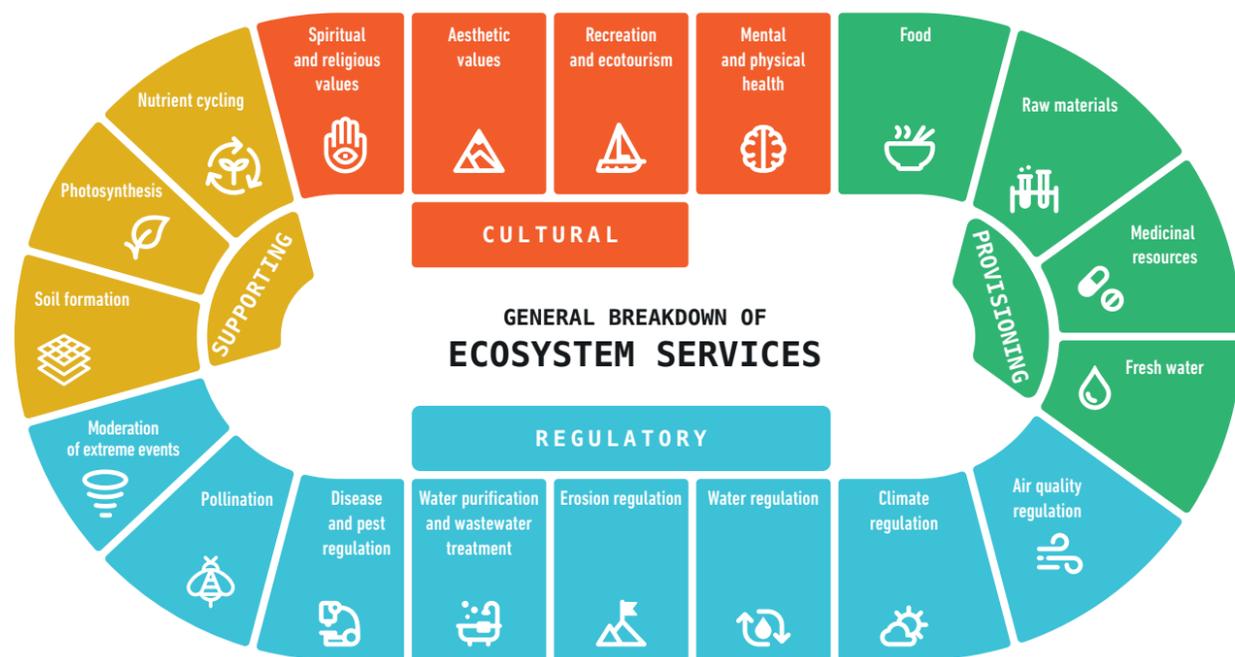
When one of these is conspicuous by its absence, restoring it requires a serious financial investment (time and energy). Just think of when a road is flooded because there is no vegetation to absorb the run-off water.

Values provided by nature for humanity are also expressed in monetary terms. The purpose of this is to be able to take these values into account when calculating the economic benefits of an investment or production, because it is often impossible or extremely costly to substitute or replace them if they are destroyed.



STOP!

Fresh bottled mountain air brought in from other continents is marketed in China. In heavily polluted Asian countries, such extreme solutions (and so radically at odds with the idea of sustainability) are proliferating too. In China, however, there is also a massive renewal and increase of forest cover, and the use of electric means of transport in large cities is being promoted to minimise local pollution.



## WHAT IS WRONG WITH LILAC?

Depending on how warm or dry the spring was, and when the lilac stops blooming, we can give it as a gift for Mother's Day, decorate the classroom, and enjoy its fragrance and varied beauty. But we also hear and read that it takes many, many hours and money for nature conservation boards to get rid of lilac. What exactly is wrong with it?

The common lilac (*Syringa vulgaris*) is an invasive species. This means it readily reproduces beyond garden fences, aggressively displacing other plants, both woody and soft-stemmed, from their natural habitat. For this reason it has become public enemy number one on Sas Hill in Budapest, and is causing serious problems in other protected areas as well.



YOUR TURN

### YOUR TURN!

Instead of grabbing an axe and chopping down grandma's lilac hedge, think about what you can do!

- You should know that only the common lilac is invasive, as the cultivated double-flowered ones do not bear fruit and therefore spread less aggressively.
- If you help with planting, suggest something else instead of lilacs.
- If you have lilac bushes in your garden, take care that they don't "escape into nature": cut off the flowers when they wither so that they do not spread their fruit, and keep the shoots under control by cutting them back.
- If you have common lilac bushes, ask your parents to replace them with some other plant, and remove the stems and the shoots.
- Get involved in expert-led field work aimed at repelling invasive species, or organise such work as a community service.



## 1 MILLION FORINTS ON A 50-FORINT COIN



Have you ever studied the coins in your wallet?

In 1993 the Hungarian National Bank issued a new series of coins. The 5, 10, 20, 50 and 100-forint coins issued are still in use today. The 200-forint coin was issued in 2009.

The obverse of the coins bears the name of the issuing country, Hungary, and the image of a protected plant or animal, except for the 10 and 100-forint coins, which bear the Hungarian coat of arms, and the 200-forint coins, which feature the Chain Bridge.



### Saker falcon

If you take a closer look at the 50-forint coin, you will see that its obverse features the image of a saker falcon. This large-bodied species of falcon has an average body length of 50 centimetres, a wingspan of up to 126 centimetres, and a body weight of 730-1300 grams. 29-30 individuals of this species – which regularly nests in Hungary – were recorded in 2018 according to the bird census. This species of the falcon family has played an important role in Hungarian history since ancient times. A bird of prey that appears in the Hungarian legend Emese's Dream, it is considered by many to be the ancestor of the modern-day saker falcon. In Hungary, the saker falcon is a specially protected bird with a nature conservation (nature) value of 1 million forints.



### Great egret

The great egret is also a specially protected bird featuring on the obverse of Hungary's five-forint coin. The snowy white wading bird is the heraldic bird of Hungarian nature conservation. The great egret, also known as the great white heron, can reach a body length of up to one metre, a wingspan of between 140 and 170 centimetres, and a weight of about one kilogram.



STOP!

The egret population was decimated in the 19<sup>th</sup> century by the fashion of wearing heron feathers. Europe's largest public conservation organisation, the British Royal Society for the Protection of Birds, was set up in 1889 to curb the slaughtering of egrets (more specifically, the trade in ornamental feathers). Today, the nature conservation value of a great egret is 300 euros.

## EVEN VELCRO!

A garden at home, a city park or a nearby forest offer countless opportunities to explore nature. A garden is a great place to grow a variety of fruit and vegetables, or even to plant flowers you like; a city park is a great place to walk your dog, for example, and a nearby forest is a great place to go hiking.



### Healing power

Quite a few plants are not only edible and delicious, they also have healing properties. It is not always necessary to spend money on expensive medicines; nature has remedies for many ailments in the form of herbs.

### Workmates

Animals can be our most loyal friends, or our most useful workmates. Songbirds living in gardens help to rid fruit trees of many pests.



### Provider

Timber from forests is the source of our furniture and the book you are currently reading. Wind drives or the sun fuels the power plants that provide us with clean energy.



### Learning from nature

Did you know that the inventor of Velcro was inspired by a thistle caught in a dog's fur? Nowadays, Velcro is not only found on shoes and clothes, it is also used by NASA to fasten astronauts' clothes and equipment for example.



The ultrasound emitted by dolphins has been the inspiration for many location-based technologies.

And the list could go on and on...



## MICROPLASTICS EVERYWHERE

### Plastics have become part of our lives.

Plastics have exploded in popularity since the 1940s, so much so that today we can hardly imagine life without them. Their outstanding properties include the fact they are flexible, resistant and can't be broken. This also means that they will be with us for a very long time, even for a thousand years (depending on the type of plastic). The problem, however, is that consumer society is not about durability!

Due to people's irresponsibility and the lack of waste management in many countries, plastics are unfortunately released into the environment along with other waste. They reach forest edges and river banks, from where they further pollute the soil and natural waters. Plastics do not decompose, they break down into tiny pieces from the sunlight and the impact of waves.



### Plastic pieces smaller than 5 mm are called microplastics



These include the fragmented waste that enters rivers and then the seas becoming the main 'raw material' of litter islands in the ocean, the microfibrils that escape from washing synthetic clothes and are difficult to filter out of sewage, as well as the microbeads used in cosmetics and tiny pieces that detach due to the wear and tear of car tyres.

As plastics readily bind toxins on their surfaces, they can be particularly dangerous if they come into contact with water. In fact, organisms at the top of the food chain, such as shellfish and fish, ingest the micro-particles suspended in the water, which then enter their bloodstream and tissues, causing poisoning, inflammation and ultimately death. In addition, because plastic is not a real food, it can reduce the size of fish and therefore the overall fish population, which can put the food and livelihoods of many people at risk. Across the food chain, microplastics are also present in the organisms whose meat we as humans consume, together with the additives used in their production and any toxins that may have adhered to their surfaces.

**Should we worry about our local rivers, our fish and our own health?**

Unfortunately, measurements prove that microplastics are present in our domestic rivers and soil as well.



**YOUR TURN!**

What can we do?

Buy less stuff made of plastic! Use and carry durable items: water bottle, reusable shopping bags, cutlery. Join the Plastic Free July campaign! Keep limiting your plastic use afterwards! Always collect your waste separately, and if you can, try to be active in collecting waste that has already escaped into the environment, join litter picking campaigns!

**Did you know?**

An independent laboratory has been performing measurements in Hungary since 2017: the number of plastic particles larger than 300 micrometres (µm) in a cubic metre of water in the Tisza river at Dombrád was 4.9.

In the sample from Lake Tisza, 23.1 particles larger than 100 µm were found in one cubic metre of water, while in the samples from the Eger stream feeding Lake Tisza and the stretch of the Tisza river in Tiszafüred, 9.5-9.9 particles larger than 100 µm were found. The detected plastics generally consisted of the widely used polyethylene, polypropylene and polystyrene.

**MICROPLASTIC CONCENTRATION (particle/m3) IN SURFACE WATER**



Based on the measurements, 12.1 microplastics were found in one cubic metre of water in the Rába river, while the microplastic content of the Ipoly river was relatively low, with only 1.7 particles per cubic metre of water. This is presumably due to the fact that the river meanders mostly in national park areas, relatively isolated from industrial and municipal influences.



**WHO ARE THE PET PIRATES?**

**The beginning of the story**

A few years ago, a team making a nature documentary was shooting on the Upper Tisza, a breeding site for protected sand martins, when they were confronted with a huge amount of rubbish littering the floodplain. They couldn't understand how such an area, inaccessible from land with magnificent natural assets, could be so polluted. They felt they had to do something. They got together, and initially organised a water trip to collect rubbish with their friends.



**The foundation of the PET Cup**

More and more people kept joining them. They realised that people were happy to do something for a good cause if they could enjoy the water trip at the same time. They announced a competition: the winner of the teams rowing in boats made of waste would be the one that clears the most waste and rubbish from the Tisza and its floodplain in 1 week. The 'trick' worked. Launched in 2013, the PET Cup has become the most participatory and effective river clean-up campaign in Hungary.

**Litter picking with recycling**

The level of efficiency should also be highlighted here because their aim is not just to take the waste out, but also to keep it in circulation – i.e. recycling as much of it as possible. Around 60 percent of the 10 tonnes of waste collected at the 2019 Upper Tisza PET Cup, or approximately 6 tonnes, have been recycled so far. None of this would be possible without the enthusiastic volunteers who sort the waste, not only by material type but also by colour (even the caps). "It's hard work, but it pays off," say the PET Pirates. Because the shared adventure brings people together, a strong community is built, and the litter picking has even "produced" a marriage.

**403**  
HEAVILY POLLUTED  
AREAS EXPLORED

**119**  
TONNES OF  
POLLUTANTS REMOVED

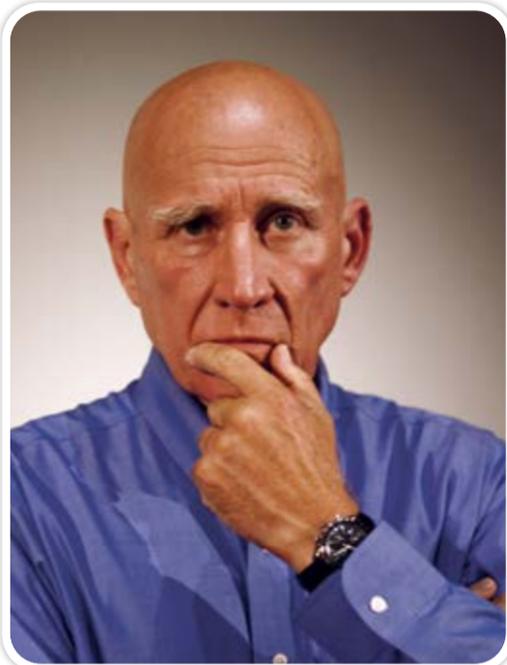
**1,487,500**  
THE EQUIVALENT NUMBER  
OF PET BOTTLES

**67**  
POLLUTED  
AREAS CLEANED

**115**  
SHIPS MADE  
OF LITTER

### PHOTOGRAPHY AS A WEAPON WHO IS HE?

Sebastião Salgado was born in Brazil in 1944. He and his family were farmers. At the time, half of their land was covered by rainforest. In addition to studying, Salgado was a political activist as well. He was forced to flee to Europe to escape the military coup and dictatorship of the mid-1960s.

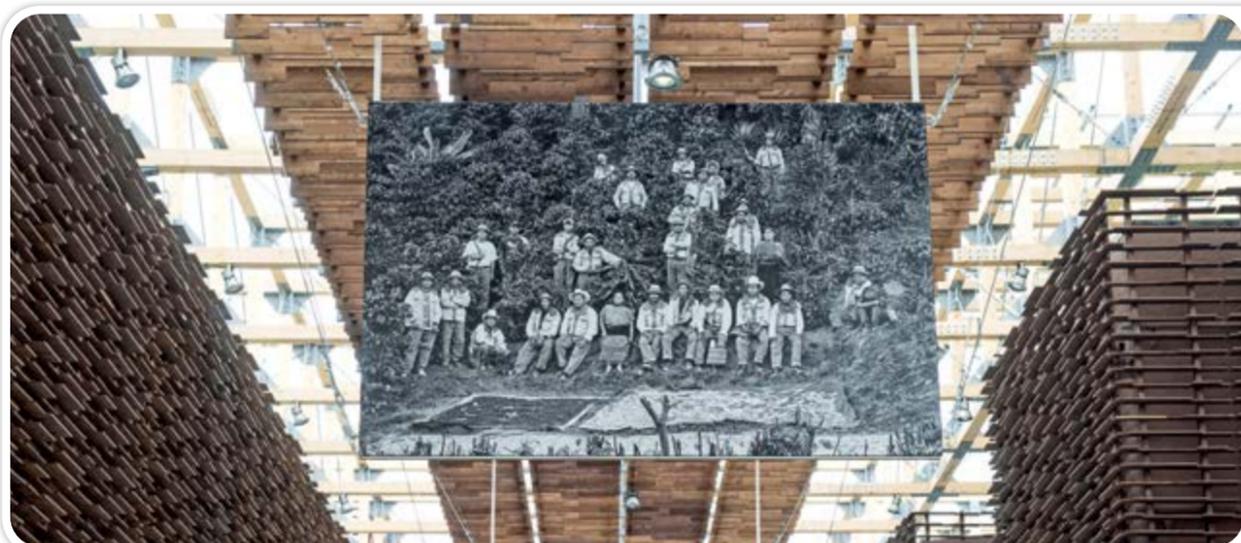


He was involved in social programmes and campaigns, where he raised awareness of the serious problems of armed conflict, hunger and exploitation on the planet through his artful photographs.

While becoming a successful, world-renowned photographer, he literally became sick of the many human tragedies he encountered in his work. In order to recuperate, he and his wife decided to return to the family estate in Brazil. But there too, Salgado was met with devastation. The former rainforest on the family farm had been completely destroyed by farming.

He and his wife decided to reforest the area, however difficult it might be. After a lot of physical and fundraising work, they planted more than 2.5 million trees from more than 200 indigenous, local species. In 10 years, the ecosystem of the place has been restored. Now a protected park, the site is home to 293 species of tree, 172 species of bird, 33 species of mammal and 15 species of amphibian and reptile, including endangered species.

Today, Salgado travels the world with his images of nature and people living in harmony with nature to raise more funds needed to save Brazil's rainforests.



### Rising up or drying out?

Hello!

I live near the Danube and I spend a lot of time on the water and at the waterfront after school and on weekends. I hear a lot lately about how our water resources are scarce. I don't really understand, because what I see is that the Danube rises and floods a lot. I also hear that we shouldn't drink tap water because it's full of plastic. What's the truth in all this?

Thanks for answering.  
Péter Tóth



Hi Peter,

Many people think we have an abundance of water in Hungary, when in fact we are more a country that suffers from extreme weather: floods, inland inundations and droughts. As you wrote, we have had record-breaking water levels and floods several times in recent years. At other times, however, water levels in several river stretches have fallen to unprecedented levels. So to understand the problems with our water resources, we need to look beyond our borders as knowledge of what happens at home is not enough. 71% of our planet is covered by water. This sounds good at first, but 97.5% of the water is salt water in oceans and seas. The remaining 2.5% is freshwater, but here too we have problems, because more than two-thirds of that is glaciers, snow or ice cover, and 30% is groundwater. These waters are not easily accessible. So of the 2.5% of freshwater, only about 1.3% is surface water contained in rivers, lakes and marshes. Hence only 0.007% of the total water supply is easy to access. We jokingly call this the James Bond ratio, after the famous 007 agent from the movies. On a global scale, our freshwater resources are scarce. Locally, they are further affected by geography. In Hungary, for example, water management has to take into account that the country is located in a basin. With climate change we can expect a further increase in extremes. We can help to mitigate environmental impacts by taking care of our rivers and lakes ourselves, for example by treating drinking water, irrigation, chemicals and wastewater with care.



The Budapest Water Summit in 2019 focused on the drama of too much, too little and polluted water. The image shows the total water available on earth (large droplet), the total freshwater (medium droplet) and the available freshwater (small droplet).

Dear Editorial Team,

My family is lucky because we live on the edge of a nature reserve, right by the forest, and we would like to sell a nearby plot of land we inherited from my grandparents. We have cleaned up the area and demolished the dilapidated brick building on it.

Our neighbour works with earthmoving machinery and offered to 'level' the rubble, along with the earth, into a corner of the forest.

I am a law-abiding person, and I don't want to get into trouble with the authorities. Can we dump the materials in the forest if there are no harmful substances in the waste?

Sincerely,  
Balázs Boldizsár



Dear Balázs,

Waste, including construction debris and even decomposable garden and horticultural waste, may only be deposited in officially designated places. Anyone who breaks this law is required to restore the original state of the given area. If they do not comply voluntarily, they may be fined up to 150 euros.

Hungary has three laws dealing with the illegal dumping of waste. Act CLXXXV of 2012 on Waste, the Criminal Code (Act C of 2012), and Act II of 2012 on Offences. Anyone who carries out an activity that is incompatible with nature conservation objectives – as described above – commits a nature conservation offence. In this case, the offence is punishable by a fine of up to 450 euros. The illegal dumping of waste is also a criminal offence, and is punishable by up to 3 years' imprisonment under the Criminal Code. The penalty is even higher (up to 5 years) if hazardous waste is deposited illegally. So the smartest solution is to have waste transported to a designated place.



### IT'S YOUR TURN, GET CREATIVE AND FIND OUT!

Solve the tasks below and discuss the results with your classmates. Start a debate on issues which you have different opinions on.

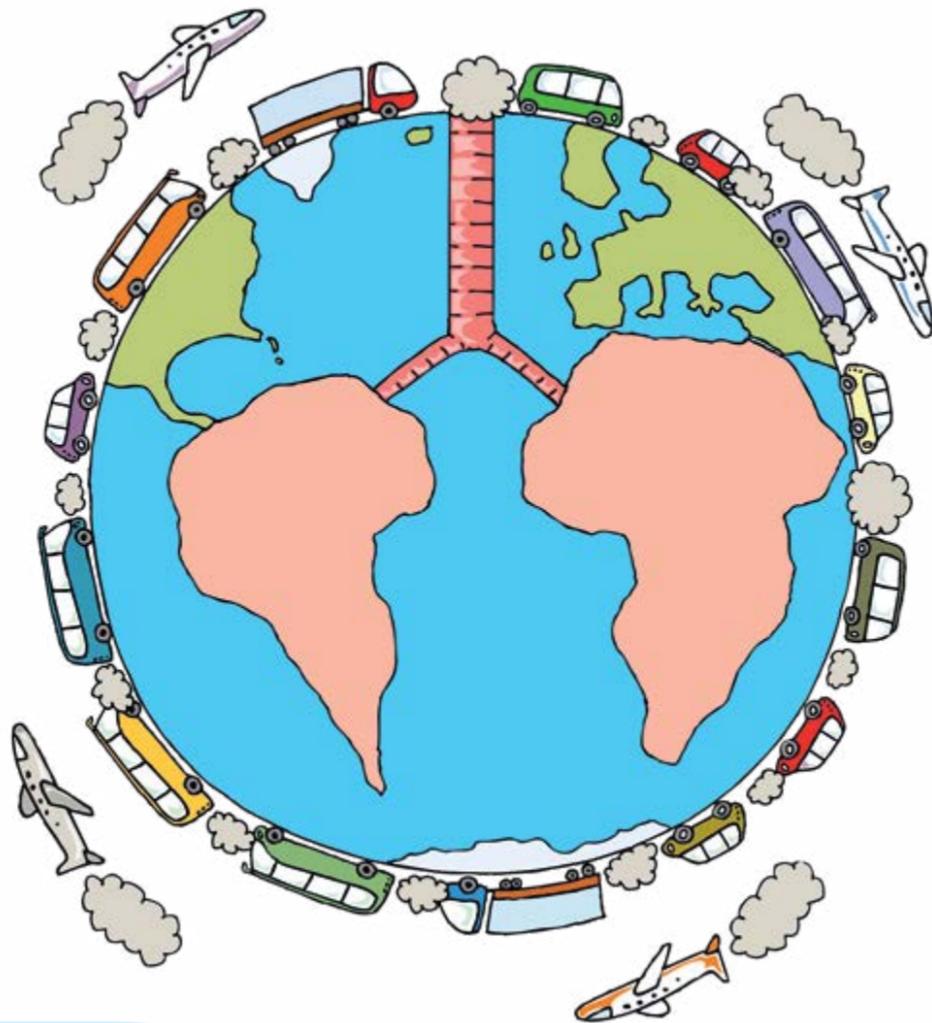
1. Make information posters on nature conservation and display them around the school.
2. Collect a list of people who have a "say" in the life of a forest, based on what criteria and what needs they have. For example: hunters – game management, hikers – tourist sign maintenance, etc.
3. Give examples of specific ecosystem services that a forest/field/wetland can provide.
4. Think about the potential pressures on the environment of a large number of tourists in a settlement with a natural habitat.
5. Look at the biochemical cycles that ensure nature's self-preservation. Explain why waste is not produced in nature.
6. What advice would you give to tourists who visit natural habitats? Write down your advice, illustrate them and discuss them; create a shared "hiking rule book" for the class before the class trip.
7. Research and share on the social networking sites you use the possibilities to clean up illegal waste dumps in natural habitats in Hungary, and in the area around your town or village.
8. Plan and organise a biodiversity project with your classmates (e.g. planting trees in your community, school garden, bird feeding, building a bee hotel).
9. Look at the possibilities for nature conservation in an urban environment. Create a poster or a map of ideas with your classmates.





# On the road?

## The price of transport



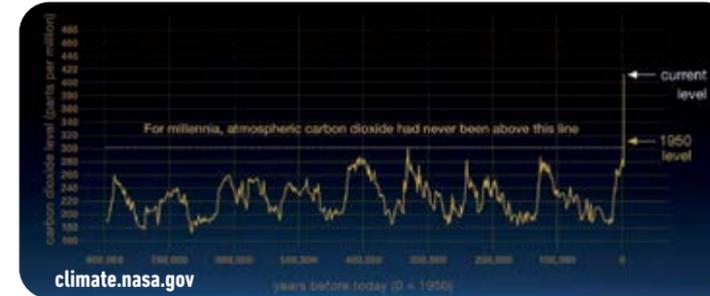
### CONTENTS

- ALBATROSSES: WHAT IS THEIR SECRET?
- INTRUDERS IN THE GARDEN
- ANIMAL TRAILS
- GEOCACHING
- YOUR CHOCOLATE

## THE PRICE OF OUR TRAVELS

### Carbon dioxide, again

Rarely does a week go by without hearing about the scale and rapid rise in carbon emissions. In 2018, atmospheric CO<sub>2</sub> levels exceeded 411 ppm. This means that out of 1 million particles, 411 CO<sub>2</sub> were in the air. And a new depressing record was set recently, with atmospheric CO<sub>2</sub> levels approaching 415 ppm in 2019.



Transport is responsible for about 30% of the pollutants released into the atmosphere. Many pollutants are emitted by means of transport, but their environmental impact is similar: carbon dioxide, methane, nitrogen oxides, other hydrocarbons. Of all the pollutants emitted, CO<sub>2</sub> is the one that experts highlight as the main contributor to global warming and climate change, because it is the gas that we emit most of into the atmosphere.

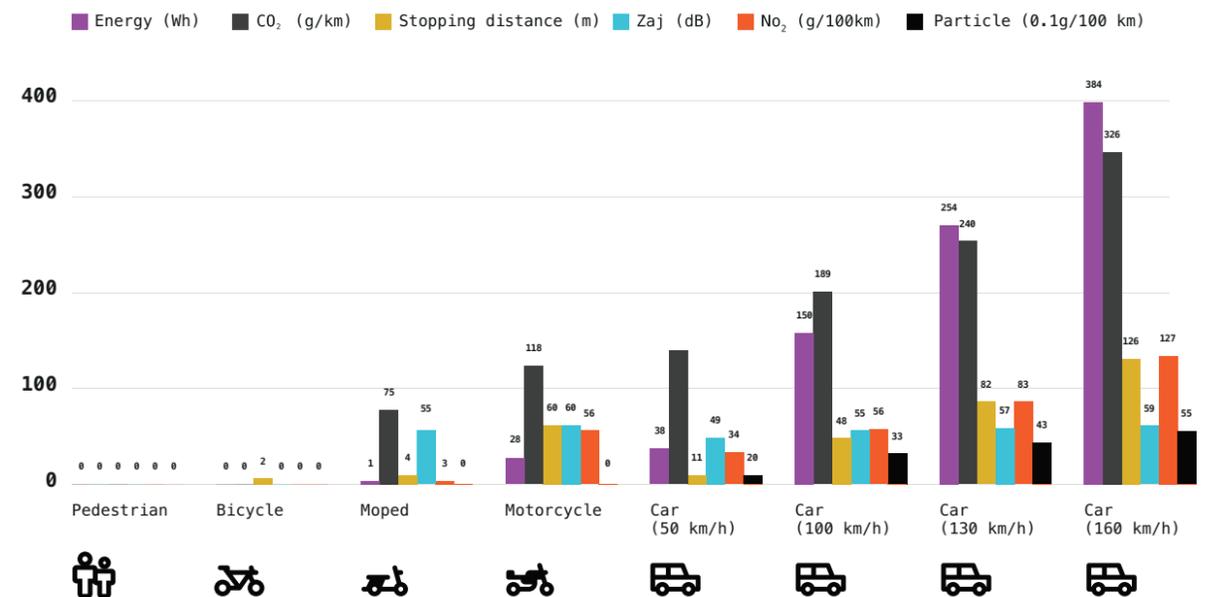
Throughout the Earth's history, the atmosphere has, at times, had CO<sub>2</sub> levels higher than just now, but these elevated levels were generated over many thousands of years, while the current significant increase started just over 200 years ago. Compared to before 2010, atmospheric CO<sub>2</sub> is rising one and a half times faster each year, the largest increase in the last 60 years. The growing effects of this rise are already being felt in the ever more extreme weather patterns and in climate change.

### What is a carbon footprint?

A carbon footprint is an **indicator**. It **expresses** the various harmful emissions in connection with our human activities **expressed in tonnes of carbon dioxide emissions**.

We can use the carbon footprint to express the direct and indirect greenhouse gas emissions generated by our lifestyle, the lifecycle of a product, the activities of a company, or a service.

## ENVIRONMENTAL IMPACT OF MODES OF TRANSPORT





FIND OUT!

## FIND OUT!

- By analysing the chart above, compare each means of transport in terms of emissions.
- Which of them do you use every day?
- Which one would you choose for your daily travel?
- Apart from CO<sub>2</sub> emissions, what other environmental impacts does transport have?



The carbon footprint of means of transport varies, so it's worth considering how we travel and using which vehicles, or how far the products come that we want to buy.

The cost of each means of transport does not reveal its level of emissions, or the environmental impact of its manufacture, route design or use. So these factors should also be taken into account when making your choice.

While low-cost airlines selling cheap tickets satisfy the needs of many, getting to neighbouring towns and cities in Hungary's rural areas is still a challenge with buses running 1-2 times a day.

In these places, in addition to a functioning village caretaker service, community cooperation (car sharing, smart organisation of transport to work or school, doctor's appointments and delivery of produce) can make life more comfortable for residents. A tax on cheap flights could be used to support the development of public transport in small towns and villages.



STOP!

Discuss with your classmates why cleaner means of transport are being introduced, and yet emissions from transport are increasing.

## ALIENS AND STOWAWAYS

Despite thorough controls in air transportation, living things from distant countries can reach our country; once out in the wild, they can find suitable conditions to thrive, and in the absence of natural enemies they spread easily, displacing native species. With fast air travel we can travel thousands of kilometres in a matter of hours, so any pathogens we carry can spread quickly, contributing to global pandemics such as the 2019 Covid-19 outbreak caused by the SARS-CoV-2 virus.



STOP!

Have you ever wondered why parking spaces are built at railway stations, or why city centre streets are being turned into pedestrian zones? Or why parking spaces are hard to find in busy, central areas, and the hourly cost of parking is rising? Perhaps why another cycle path has been opened, another roundabout is being built on the main road, and the length of the bypass is increasing? These measures are designed to reduce traffic by improving pedestrian, cycling and public transport to create a safer and more liveable environment in larger towns and cities.

## TELEWORKING WITH COLLEAGUES

## Working from home

If you've experienced online education, you may have an idea of the pros and cons of teleworking. Teleworking is when you don't work at your actual workplace, but remotely, and you keep in touch with your colleagues online. This has a number of advantages and disadvantages. Some advantages include the possibility of setting your own schedule, and being able to attend a meeting in your pyjamas while having the washing machine running. The disadvantages are almost the same. Everybody needs companionship and a personal presence, everyone needs to dress up nicely for example. So what's good in some respects can also make you unhappy. For instance, many people's days become disjointed, and their family and work problems become intertwined.

## What is a co-working office?

The above considerations were what inspired the idea to create so-called co-working offices. This way, teleworkers can have a workplace separate from their home, while at the same time having all the conditions and tools they need to work. Those who choose to work in a co-working office only have to select their desk and their coffee. If you take a break, you also have the opportunity to get to know the other people in the office. I recently spent two weeks in the Cloud Co-working Office, where I came to realise why my fellow workers are so passionate about their workplace.

## Emma, founder of the Cloud Co-Working Office

- What was the idea behind it? Why did you set up the Cloud Co-Working Office?
- Everyone works in the cloud now, right? We wanted to provide a place for digital nomads who feel like they need a community. We believe that beyond a physical location, people can come here to exchange ideas, and establish future collaborations and friendships.
- Wait, not so fast! Who are these digital nomads?
- Entrepreneurs or workers who can work from pretty much anywhere, regardless of their location, as long as they have internet access. They keep in touch with their customers, partners, colleagues or even their boss - who often live in another city or country - through virtual channels, so they don't have to travel to every meeting in person. I think this way we save a lot of energy and greenhouse gas emissions for the planet, and ultimately for humanity!



Become a digital nomad, and you will be able to work from anywhere

### Edmund from Germany

The real buzz of a co-working office is the diverse community of employees. The office is occupied by employees from a variety of different businesses, often coming from abroad. I only met Edmund in the second week and I must say he's a really interesting young man.

- How long have you been working here?
- I've been in Hungary for two months.
- What brought you here?
- I work in IT, I'm a software developer. One day a thought struck me, and I bought a train ticket to Budapest. I haven't actually flown in years; I feel that using more 'down-to-earth' means of travel is much cooler.
- Where do you live? And why don't you work from there?
- I rent a shared apartment here in Pest with several people. I chose a place where your personal space is small and the communal space is big; after all, you can sleep in a small room, but in the evening we have a nice chat with my flatmates, and we decide who's going to cook on which day. But during the day I need an inspiring environment where I can work in peace. If a question arises there's always someone there to discuss my thoughts with over a fair trade coffee, or to ask for advice. I'm lucky because this office is very close. I use the bike-sharing network from in front of my house, and I'm here in 10 minutes.

### I run into Liza by the coffee machine

- I had coffee with Liza on the afternoon of my third day.
- We can say that an office is defined by its coffee (he laughs). The coffee machine is a meeting point in an office, where many acquaintances have been made throughout history.
  - I understand you work for an international organisation.
  - Yes, I do translations from English into French for nature conservation projects. My co-workers live in other European cities, but some of them log in from their own farm! Every morning we have an online meeting to start the day, where we decide who will do what that day.



- Why did you choose this place?
- It was basically my workplace that chose it, and I agreed wholeheartedly. They wanted a really green space so that employees could minimise their carbon footprint, yet still be able to focus on their work in a nice and tidy office environment. We make sure we collect waste separately, and we have a charity shop as well. When I shop, I always ask myself, do I really need the products in my basket? If I don't need an item anymore, I bring it in and it feels really good to know that it's going to the right person, so I'm not polluting the environment with unnecessary waste.
- What is the community like?
- Super cool people work here, and everyone is good at something different. We have a lot of community activities, like having lunch with other co-workers on Tuesdays.
- So, what is the community like?
- Not only is it fun, but we have a similar outlook too. For example, there is a bistro next door where locally sourced ingredients are used to make delicious food. We eat there most of the time. As a committed environmentalist, I eat very little meat, and I can always find meat-free options here. There's an office meeting room that can be rented to outsiders, and sometimes there's leftover dips, vegetables or pastries after a meeting. We always share these with community members so we never throw food away. But these are not the only benefits of the community!
- Then tell me more!
- Guess what. I wanted to improve my Spanish, and there's a girl from Spain here. We organise language exchanges, as she's studying Hungarian at the moment. We help each other, so everyone benefits.
- So we can end with this: everyone benefits here!
- They really do, everyone benefits here.

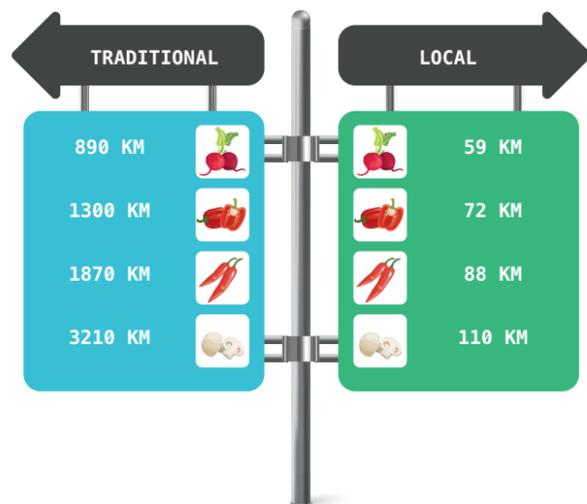


**BUY LOCAL, AND EVERYONE BENEFITS!**

Who thinks about globalisation when they're hungry? Yet if you were to put flags on the Sunday lunch table according to the origin of the products, you'd have a mass of flags on the table, says Béla Kovács, an economist with a deep knowledge of foreign trade.

**MAKE UP A FAMILY QUIZ!**

- Quiz your family members on who knows where a particular dish or ingredient comes from. You can even put little flags on each dish for more fun.
  - You can prepare for the quiz in advance if you know the menu. Of course, you can play the same game with your friends in the school canteen.
- The winner is the person who can name the country of origin of the most dishes or ingredients.



Comparison of transport distances for traditional and local products

– In order to increase their profits, supermarket chains nowadays often sell products imported from abroad. But why do so when there are equally good, and sometimes even better quality domestic products? – I ask the economic expert.

– In recent decades, many industries have gone global. As a result of globalisation, customers have become used to eating strawberries and bananas any time of the year, or picking up the latest mobile phone from the shelves a few days after it is launched. Similarly, cosmetics and certain services have become global products too. The benefits are undeniable, as outsourcing production to countries with cheap labour coupled with cheap transport results in lower prices for consumers. Consequently, people in developing countries can also access goods and services that we take for granted. But we shouldn't overlook the downsides of shopping opportunities that cater to every need.

– What are the downsides? After all, this way we can always get anything we want!

– I could go on and on for a long time, but let's start with the most important thing: economic dependence on other countries. Not all countries have the climate and geography suitable for a flourishing agriculture. In the case of technical goods, not all countries have the technology to manufacture them, nor can they produce modern telephones or cars like the Germans, for example. So the only way to meet the needs of customers is to import these products, to bring them into the country. However, importing the above-mentioned products can lead to economic dependence. But essentially, there is no country in the world that does not import at all. Mutual economic cooperation between countries ensures the supply of each country, while the economic relationships and the profit also reduce the chances of armed conflicts emerging. The ever-increasing population of the world along with the development of the global economy creates an opportunity for more people to live a life of greater consumption, which brings with it greater environmental pressures; namely, there are more and more of us, and we consume more and more.

– Many countries are forced to import large quantities of goods. Are there countries whose food supply is essentially based on imports?

Yes, such as the Vatican or Luxembourg. In some countries, 75-80% of the goods consumed come from foreign imports.

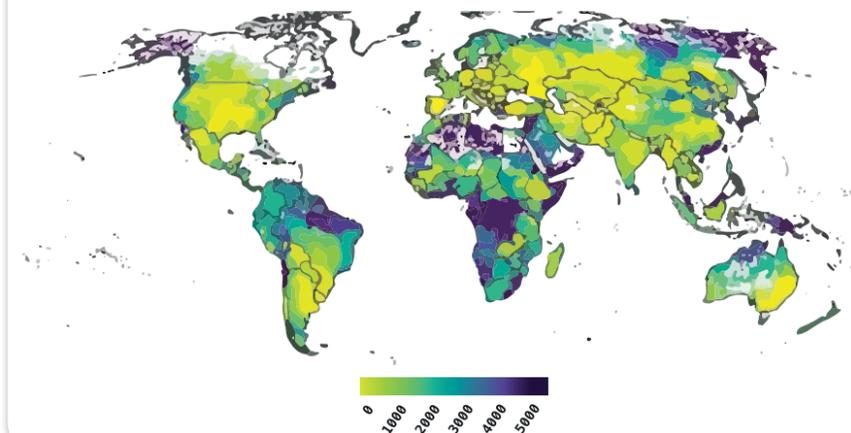
– What are the risks of economic dependence?

– If we do not supply consumers with our own manufactured products, a price rise on the world market, a crisis or a transport problem can cause huge supply problems. Hungary is in a good position in this respect, as 80% of the food available in Hungarian shops is produced domestically.

– I heard the expression 'food mile' the other day. Is that related to what you've just said?

– Of course, since a food mile or kilometre is the distance a product travels from the place of production to the consumer's table. But of course, it applies to other products as well, not just food. And this is where the ecological impact of globalisation comes in. The greater the distance between the place of production and the place of consumption, the less sustainable the product is considered to be. As the map shows, there are parts of the world where food travels more than 5,000 kilometres by the time it arrives on the table. The transport costs of products do not reflect the emissions related to the transportation. If these were also included in the cost of transport, it would make transport more expensive, which would reduce the transport of food from thousands of kilometres away, such as Spanish peaches or Chinese garlic.

MAP SHOWING DISTANCE BETWEEN PLACE OF FOOD PRODUCTION AND PLACE OF CONSUMPTION



Moreover, as I mentioned above, this way countries can get access to products that they themselves cannot produce for economic or climatic reasons.

In addition to the cost of making it, the price of a food product in a shop includes the cost of transport, refrigeration, preservation, packaging and even marketing. When you buy that kilo of bananas, the latest edition mobile phone or brand-name clothes, think about the fact that the raw material is grown or produced in one country, assembled or sewn in another, packaged in a third and may end up on the shelf of a store in a fourth.

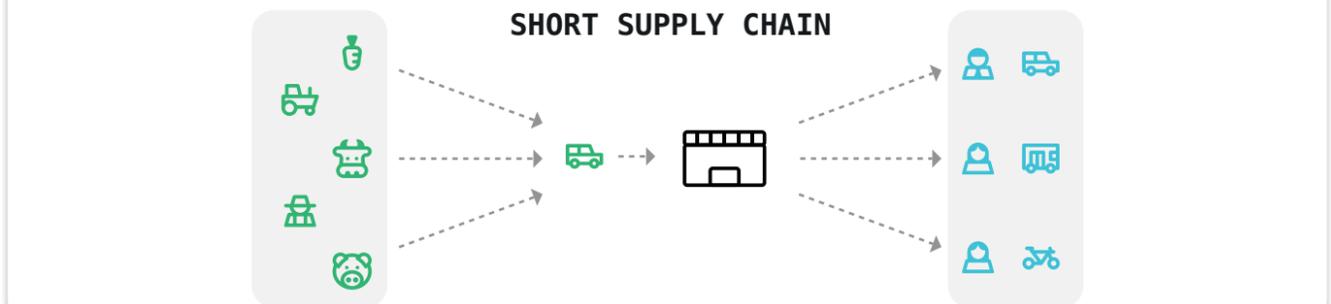
– Looking at it this way, a product really does travel a long distance.

– Yes, this is what we call a long distribution chain. Yet long distribution chains have advantages as well as disadvantages. For example, a long supply chain provides jobs and revenue for many businesses.

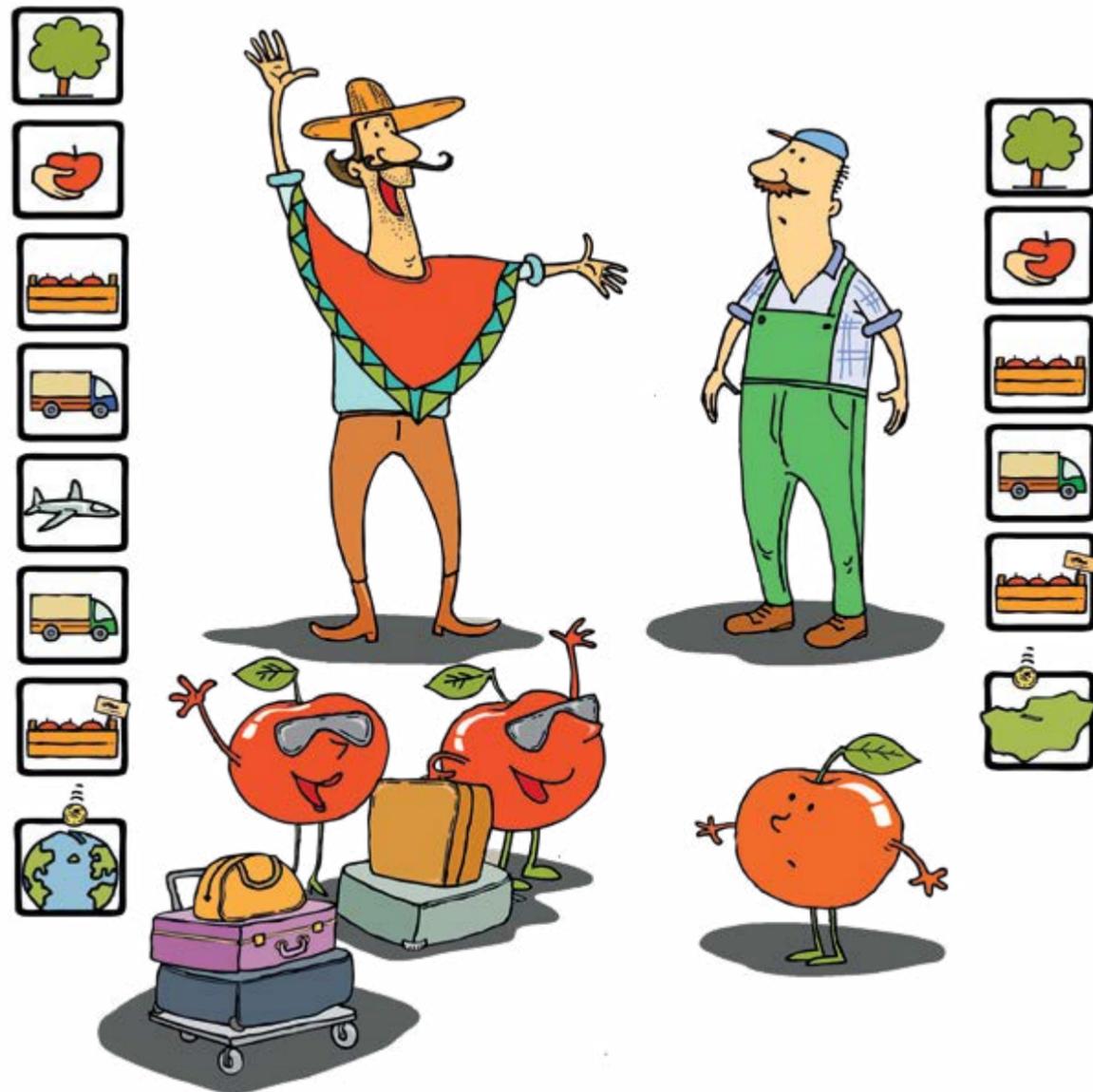
**TRADITIONAL SUPPLY CHAIN**



**SHORT SUPPLY CHAIN**



- So products that come from so far away are also more expensive than domestic ones?
- Not always, although this would be logical. Competition for customers means economic operators seek to keep prices as low as possible. The reason for this is that production in some countries is more efficient or more modern than in Hungary, with lower wages and different legal regulations than in Hungary, and production may even be performed in a way that damages the environment. There are cases where a short supply chain product from a local producer to a local consumer costs more than its globalised counterpart. However, those who can afford to buy potentially more expensive domestic products support local producers and the country's economy, and also help the environment.
- What advice would you give to those who want to buy products that have travelled as little as possible?
- If you have a preferred chain you always shop from, look for the country of origin on the packaging of each product, and choose the country of origin or the product produced closest to where you live in Hungary. If you want to support the local economy as much as possible, buy from the local market, where you can purchase directly from small producers or those with short supply chains.



At farmers' markets you can find locally grown or produced goods. Look online to find a farmers' market in or around your area.

### TRAVELLING CAN BE AN EXPERIENCE FOR THE PLANET TOO

Venice is one of the world's most popular destinations, and its public squares are visited by millions of tourists all year round. In September 2016, however, the city's residents marched through the streets of Venice in protest against tourism. Despite Venice's huge revenue from tourism, the crowds of people who flock to the city have made it literally unliveable for the locals. If not as spectacularly, the drawbacks of mass tourism are still felt all over the world.



The World Tourism Organisation estimates that 1.8 billion people a year will travel for leisure by 2030. Globally speaking, tourism revenues already support around 200 million people. At the same time, tourism has a significant impact not only on the economy, but also on nature and society, though the views on this impact vary much more strongly.

The main negative impacts of mass tourism include the destruction of natural habitats, air pollution, increased water and energy use, chiefly due to the development of infrastructure to accommodate tourism (airports, motorways, hotels, etc.). In addition, there is littering, noise and light pollution, and often the exploitation of local people; besides, we cannot ignore the effects of Covid-19 and similar pandemics either.

Do we have to give up on this exciting way of learning about the world and different cultures? Or can we travel with the least possible impact on the environment and its inhabitants?

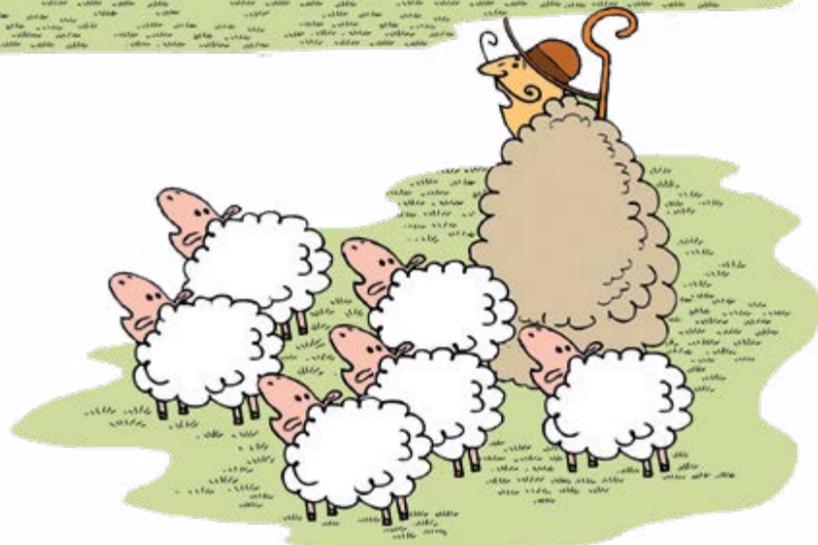
Responsible tourism is an increasingly popular alternative to mass tourism. Responsible tourists seek to minimise the negative environmental, social and economic impacts of their travel. Moreover, they seek to make positive changes by building relationships with local communities. Responsible tourists have a direct and mutually respectful relationship with the local people.

They conserve water, energy and raw materials, choose environmentally friendly forms of travel wherever possible, and generally respect human rights – consciously avoiding, for example, the exploitation of local people. They buy local products to support the livelihoods of the local people and the development of the local economy. However, tourists are only one of the players in responsible tourism.

The sustainable and ethical approach must be shared by tour operators, accommodation providers, government agencies, NGOs and, of course, local people.

What does this mean in the lives of the citizens of Venice? Of course, the livelihoods of many people there depend on tourism. Part of the solution is to limit the number of people who can enter the city. For example, from May 2019, a fee has to be paid to enter the streets of Venice. In the future, in addition to the daily fee, online booking will be compulsory before travelling, just like when buying a ticket to a museum online.

Whether you go to Lake Balaton or the Adriatic, it's important to be well prepared. Research the place, learn about the life and customs of the people who live there. Take the train when you can, walk or cycle when you get to your destination, eat food made from local ingredients, choose accommodation that uses renewable energy, don't pollute the environment, respect the people. In short, be the kind of tourist you would want to see at the place where you live.



## ELECTRIC CARS, THEN AND NOW

Many argue that electric cars will be the cars of the future. There is barely a car manufacturer that does not already produce a hybrid or electric model. In fact, more of them are already sold in Norway than conventional petrol cars. Ironically, however, Norway owes its wealth to the oil it exports.



The technology itself is not new. The electric motor was invented by Ányos Jedlik in 1828. In 1888, Andreas Flocken built the first four-wheeled electric car, by 1897 New York taxi drivers were using electric cars, and their popularity is shown by the fact that they accounted for 28% of all cars on the road in America at the turn of the century. Then came Ford's first popular product, the Model T, and the world forgot about electric cars for a long time. The reason for their comeback is simple: air pollution from transport reached a level that urgently needed to be tackled, while there is also fierce competition for fossil fuels. So transport engineers began to look for fuels other than ones based on petroleum.



Wiki

On 18 December 1898, the Frenchman Gaston de Chasseloup-Laubat reached a speed of 63.15 km/h behind the wheel of a Jeantaud electric car.

This record was broken four months later, also by an electric car, that reached 105.9 km/h.

Electricity is the obvious solution, as it is cheap and electric motors can be more than 98% efficient, using the energy needed to run much more efficiently than internal combustion engines.

Of course, the electricity would only truly be "green" if it were produced from renewable energy sources, such as solar or wind power.

Imagine solar panels on our roofs generating the energy we use to charge our cars. Do you think this is a utopia? Not at all!

### Benefits

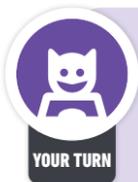
The advantages of electric cars over their diesel or petrol counterparts are that they do not emit pollutants or greenhouse gases on the road, and they have a lower noise footprint. In addition, the fuel – electricity in their case – is much cheaper than petrol or diesel.

Producing the fuel is even less polluting if the energy is generated from renewable sources. Parking with green plates (signalling an electric or hybrid car) is free in Budapest, and in many rural towns and cities. They are cheaper to maintain and less likely to break down. In many cases, they use electric motors to slow down while recharging their batteries. The physical brakes are only used for stopping from around 5 km/h, so the brake pads only need to be changed every 200-250,000 kilometres because they have a much longer lifetime, thus reducing the burden on our environment. The CO<sub>2</sub> emissions of electric cars are 40-70% lower than their petrol counterparts.

### Disadvantages

The main obstacles to a rapid uptake of electric cars are their price, and for the time being, their limited range. Although many engineers around the world are working to increase the latter, the stored energy means that for now these vehicles need to be recharged after roughly 150-500 km of driving. The number of electric (direct current) fast chargers is steadily increasing in Hungary too, with charging times of 15-30 minutes. This means that longer journeys with an electric car should be planned carefully, and a break or a meal should be included during the charging period.

The air quality in our cities would be improved by electric cars, but battery production is a major environmental burden, and solutions for disposing and recycling the large amounts of used batteries are only now beginning to emerge.



### YOUR TURN!

If you want to see where the Tesla Roadster launched into space on 6 February 2018 is now, you can check it out online here. You can also search for articles about space junk. Have a chat with your classmates about the costs involved, and about what you would do in each case!

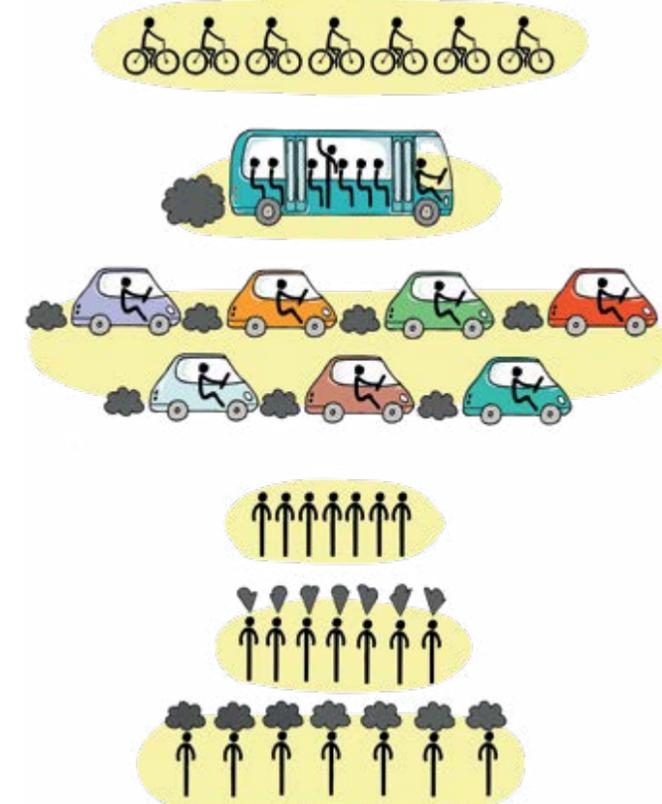


### CYCLE TO SCHOOL!

Whether you're already cycling to school, or just planning to, here are some things to bear in mind before you get on your bike. When choosing your route, start by checking whether the town you live in has a cycling map. If yes, choose the route from home to school that suits you best. If not, experiment and make your own map!

Things to consider: it should be fast and safe, it should have clean air, and it should be beautiful (admire the beautiful buildings, the sights or the park you pass through). Cycling gives you a variety of choices: you can choose the routes depending on what your current mood is.

Nowadays, the rules of the road in Hungary allow you to cycle into one-way streets where the sign lets you, so you can reach your destination faster. Another advantage of cycling is that you can bike along routes – through parks for example – that you would not be able to access by car.



### YOUR TURN!

- If the area around your school is not safe for cyclists, or there is no safe place to leave your bike, see who can help you.
- Form a group and talk to parents, form teachers and the head teacher.
- Map out what is needed: slowing down the traffic, making the street a one-way, putting up signs, bike storage.
- Find out who is responsible for implementing each of these, and what is needed. Some bicycle lanes have been created based on initiatives from the community.
- Find out what you need to pay attention to cycle safely.
- Discuss with your classmates how they take care of their own safety.
- If you need some ideas, the Hungarian Cyclists' Club, the largest cycling organisation in Hungary, has a handout for you to download from their website.

→ **SPEED-SWIM TO WORK, SKATE TO SCHOOL**

A young man in Munich got fed up with sitting in traffic jams on his way to work. Every day, he puts his laptop, suit and shoes into a watertight bag with a good seal, and sets off for work. But instead of getting into his car, he walks to the Isar river, gets in the water and swims to work. He makes the 2-kilometre distance comfortably and stress-free every day. Today, more and more people are following his example.

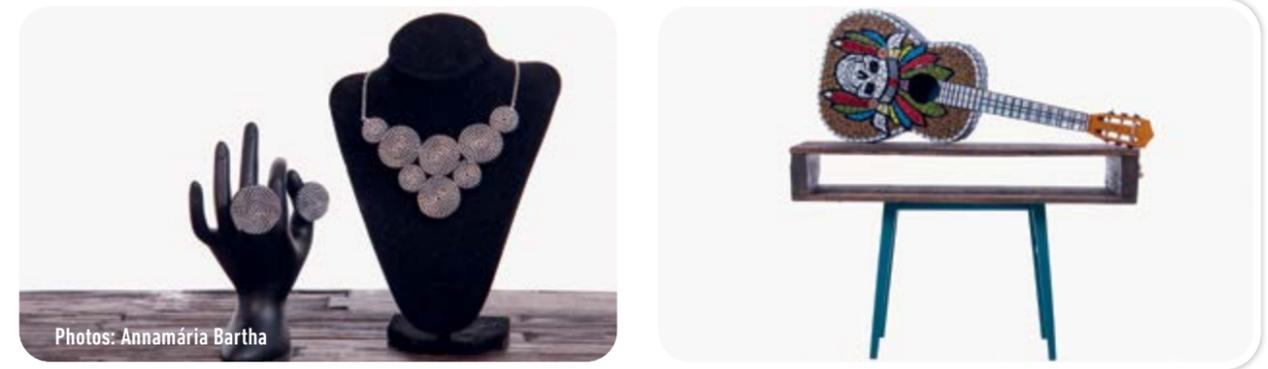


In the Canadian capital of Ottawa, the Rideau Canal is frozen over for an average of 50 days a year, but in some years it could be skated on for 95 days. The ice on the 7.8 km long and 6 m wide canal is regularly maintained, so there is always a good quality rink for skaters. The canal connects the city centre with outlying areas, passing two universities and several other educational institutions. Many people skate to work and school on the canal, as the distance between the two furthest points can be covered in 20 minutes at a comfortable pace. This way, they can enjoy both free transport and daily exercise.



→ **DIY, DO IT YOURSELF!**

One of the best ways to spend your free time is to make something decorative and/or useful yourself. It's enough to browse around on Pinterest to realise that do-it-yourself projects (DIY for short) are experiencing a renaissance these days. Almost everything can become a raw material: old, worn-out, broken or obsolete objects you are bored with can be repaired, repainted and transformed to extend their life. All it takes is a little skill and creativity.



Bikes may need repairs that you don't need to take them to a shop for because you can do it yourself at home. For example, changing inner tubes and adjusting brakes. (You can find many videos on YouTube that explain how to do these repairs). It may come as a surprise, but cycling-related items can also be used as raw materials. Some people make belts, purses or jewellery from inner bicycle tubes. But there have also been exhibitions of sculptures made from bicycle parts, and you've surely seen shops with a used bike as a flower stand.

→ **GEOCACHING IS 20 YEARS OLD, BUT IT'S STILL COOL!**

Geocaching is a game, a sport, and a leisure activity that respects nature. The aim is to explore nature, and also to find a password that someone else has hidden.

The movement was launched in May 2000, but it was not without precedent; the only difference is that previously the location was shown by a description, and now it is given by a coordinate. The spread of GPS, GPS devices and then smartphones made this leisure activity cheaper and more widespread.

Participants in the game hide a container (a tightly closed, weatherproof box called a geocache) in a place they find interesting and valuable. This can be valuable from a natural, cultural or even historical perspective. The geocache also holds a password, a logbook and often a small gift. The exact coordinates and a short description of the location are published on the game website.



Geocachers can use this information to find the cache, and if successful, use the password to log this on the website. One important rule is that the cache must be repacked and hidden in the same way as it was found by the geocacher, and the gift inside can only be replaced (and it can't be food). The time and circumstances of the find, and the name of the finder, must be recorded in the logbook. On the website, you can upload photos and write a description of the journey and comments, so that in time an up-to-date online guidebook based on personal experiences can be created. When searching for destinations, choose geocaches closer to home, or if you want to search further afield, choose public transport or cycling instead of driving.

## SUP TOURING

### Water-based recreational activities on rivers and lakes

SUPs are becoming ever more popular in Hungary too. SUP means 'stand up paddle'. It is a combination of surfing and canoeing, but also requires some balancing. You can paddle on Lake Balaton, but more and more people are posting about paddling on the Danube too. It's the perfect way to recharge your body and soul, and you can see the river or lake from an angle you've never seen before. Organised tours are now available, so you don't need to own a SUP to try it out for yourself and learn the rules of safe water transport.



## ANIMALS TRAVELLING THE WORLD

There are some excellent examples of global travellers in the animal world. Just think of our migratory birds. One of the great travellers of the animal kingdom is the common swift, which spends more than 90% of its life in the air, essentially landing only to lay eggs and breed. Albatrosses, on the other hand, are the champions of flight efficiency. Some species have wingspans of up to 3.5 m. Researchers have been investigating what allows them to stay airborne for days on end, essentially with just a few flaps. This is due to the albatrosses' special elbow joints and their ability to fly and glide. Their elbow joints can keep their wings rigid without needing muscles. Their ability to glide also includes being able to take advantage of even small upward air movements caused by waves.



One of the secrets to an albatross flying is that they can sense air movements and pressure differences perfectly.

## ANIMALS AT RISK

Migratory birds often fly at night during long journeys, and light pollution from urban lighting makes it difficult for them to find their way around. If these lights are caused by spotlights directed upwards, they can become trapped. In New York, for example, volunteer observers turn off the floodlights at Ground Zero when multiple birds start circling following the beams.



Swallows, for instance, can die if they crash into glass panels on tall buildings. But many birds can detect UV light (which is why they don't fly into cobwebs, for example). Modern skyscrapers therefore incorporate UV-reflective fibres into the glass panels to help birds detect them. You've probably seen silhouettes of birds of prey displayed on smaller buildings.

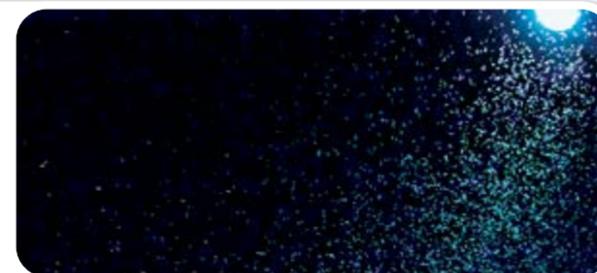


Many birds are injured and killed by electrocution when they collide with power lines. This could be avoided by insulating the wires or by using underground cables. Storks are protected from electrocution by a basket placed high on the poles.



To breed, frogs migrate to be near water. If this migration route is crossed by a road, "frog tunnels" are created for the safety of both animals and motorists. These tunnels also allow the animals to return to the water and their habitat.

Wildlife can be disturbed in their normal habits by a gravel road, by poor drainage that causes a landslide, or by a disrupted side row of shrubs, which car headlights shine through at night. Movement between their habitats – separated by roads – is facilitated by passages built for them, taking their habits and patterns into account.



It's a beautiful sight when female mayflies start to fly upstream, following the light reflected from the water. However, the lights from the bridges crossing the river cause them to fly upwards, and the light from the asphalt on the bridge looks very much like the surface of the water to them. This is why masses of them lay their eggs on asphalt. Bright spotlights suspended low from the bridge help them stay close to the water.

**HELP THEM!**

**Water-based recreational activities on rivers and lakes**

What are some of the solutions in the diagram that make it easier for animals to get around? What else could be done? Think about it, draw them, and show others what works where you live and what could be improved.



**WHERE DOES YOUR CHOCOLATE COME FROM?**



Chocolate is one of our basic foodstuffs, and you probably have a few bars of your favourite in your kitchen cupboard at home. But do you know how far it travels to your kitchen?

Around 400 years ago, the first shipment of cocoa arrived in Europe from the tropical rainforests of the northern part of South America, and from there it made its way to conquer the world.

Chocolate is made from cocoa beans, the fruit of the cocoa or cacao tree (*Theobroma cacao*). Cocoa beans are also the source of cocoa butter and cocoa powder. The global annual cocoa production is three million tonnes.

Although cocoa originates in the Americas, two-thirds of world production now takes place in Africa – in Côte d'Ivoire, Ghana, Nigeria and Cameroon. The last third is produced in South America (Brazil and Ecuador).

So when you munch on a bar of chocolate, the cocoa beans it was made from were harvested in a developing country. This means in a place where a fair wage for work performed is rare, and exploitation is the norm, often involving children. That's why when you buy chocolate, you should look for the Fair Trade logo on the wrapper to guarantee that no one has suffered for your chocolate.



But that's not the only problem with chocolate (and coffee, tea, exotic spices). It's also the distance. How far our food travels from the plantation to our homes is determined by the food mile.

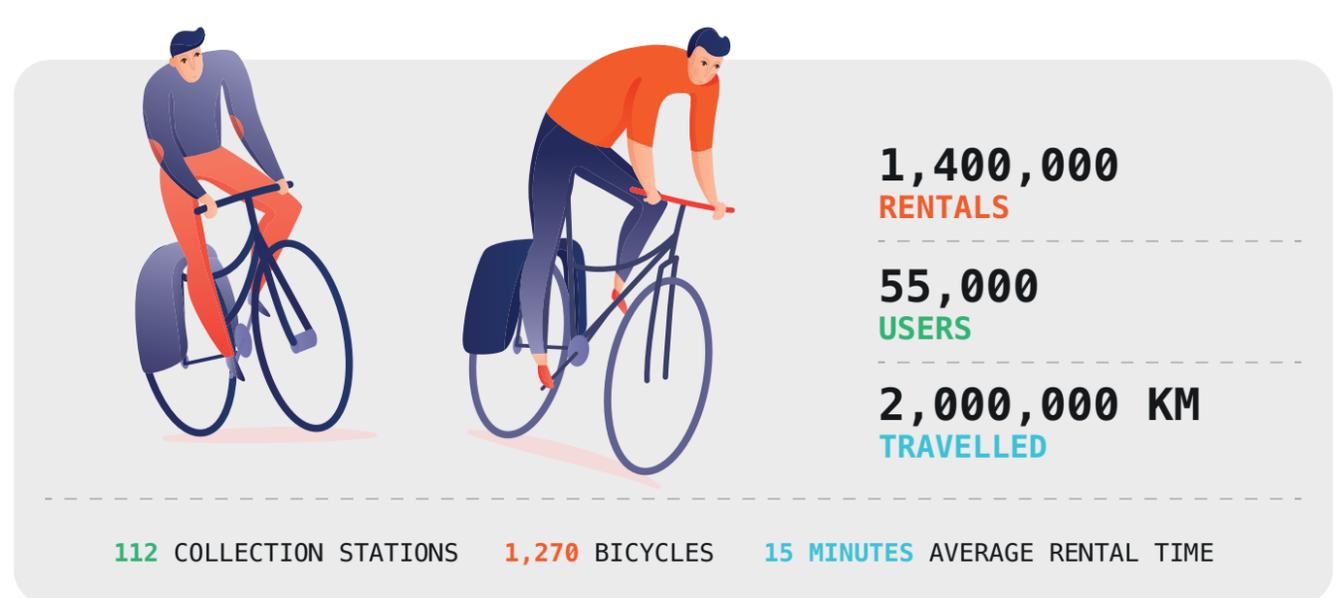
There are several calculators to measure food miles, including one that lets you work out the carbon emissions needed to transport your favourite chocolate to you by entering the weight and type of transport (boat, plane). Moreover, it is particularly true of tropical fruit and vegetables that various chemicals, such as ripening inhibitors, are used to ensure they can survive the long journey. That's why it's extremely important to wash them thoroughly and never eat the peel!

After reading all this, your first reaction might be that you don't want chocolate at this price. But your second reaction will certainly be: what should I eat instead? Unfortunately, as cocoa beans can only be grown in the countries listed above, which are particularly vulnerable to the negative effects of global warming, it is difficult to find a suitable alternative. Few people are familiar with carob, a ground powder made from the seeds of the carob tree, which is indigenous to Asia Minor, and can be a healthy alternative to chocolate. You can of course choose to eat sweets made from locally grown ingredients instead of chocolate (such as biscuits). The quest for sustainability comes with choices. If it matters to you what you eat, read the packaging, choose goods with the Fair Trade logo, and whenever you can, buy local products that have travelled fewer food miles.

**BIKE-SHARING FOR CLEANER AIR**

Community bike-sharing services for fast and convenient cycling are spreading quickly in our big cities. You don't need your own bike to ride green in the city; you can use community bikes available in many parts of the city.

Let's calculate together how much bike sharing would have saved Budapest in carbon dioxide emissions if everyone had chosen to cycle instead of driving! In the calculation, the same distance was covered by both bicycle and car.



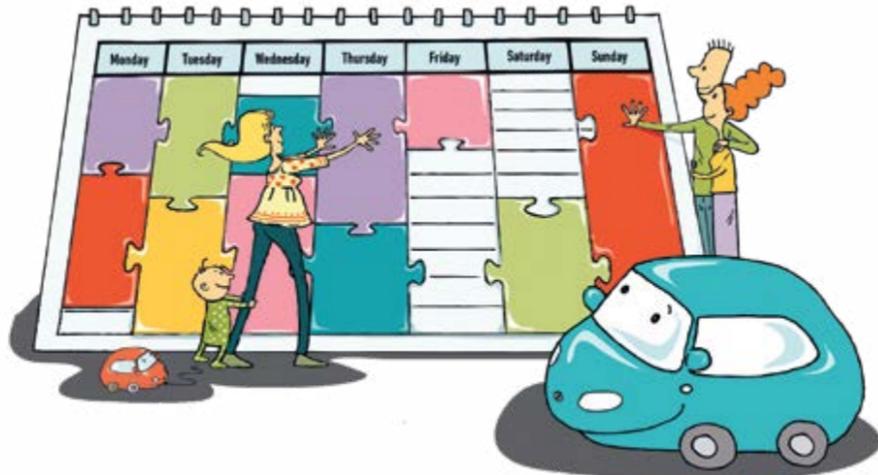
### CAR SHARING FOR GREENER TRAVEL



#### YOUR TURN!

1. Look up what car sharing means.
2. What are the advantages and disadvantages for the car owner and the service user?
3. Look around your community to see what the traffic is like, and whether there is a need and possibility for car-sharing.

YOUR TURN



#### YOUR TURN!

- Create a short questionnaire with 5 questions to find out who knows the most about environmentally friendly travel.
- Have your classmates take the test, and fill in the questionnaire that they have made.
- You can also make a joint questionnaire for another class, or even for all the students in your school.

YOUR TURN



### Intruders in the garden

Dear Gardening Magazine,  
I would like to ask for your advice. We have a plant that has spread in our garden, and is growing very fast. At first we didn't know what it was, or where it came from, but we looked it up on the internet and found that it was a tree of heaven, which is described as being very dangerous to other plants in the garden.



In the meantime, we also found out that a neighbour had planted one of these trees, and that the seeds had "come over" to us from his garden. We wouldn't want our existing plants to die because of it. What can we do to prevent this?

Concerned Gardener



Dear Concerned Gardener,

First of all, we are very sorry to hear that the tree of heaven has appeared in your garden, because it is very difficult to control! The *ailanthus altissima*, or tree of heaven, came to Hungary from China in the 1800s, so it is an alien species. Its emergence is the result of a deliberate introduction and it is now present almost everywhere (in fields, forests, cities and gardens). It is an invasive species. This description signals the main problem with this tree: it invades the area where it appears, taking the water and nutrients it needs to survive from every other plant.



It is not the only invasive species in our country, as the propagation of species in new areas and their accidental introduction is a long-established phenomenon; however, this tendency has increased over the last century due to globalisation, trade and tourism.

Europe has approximately 12,000 alien species, of which only a small proportion, 10-15%, are considered invasive. Nevertheless, these plants are one of the causes of biodiversity loss and species extinction.

The way to protect native plants against them is to eradicate them. But don't just cut off the stems; pull them out by hand or use a shovel to remove them, root and all! Be very careful not to leave any part of them behind, because even a tiny root can sprout again! Once the tree is bigger, you should not cut it down, as this way you will only help its young shoots cover the area. At this point, unfortunately, it can only be handled by chemical means. These effective, selective eradication methods (e.g. applying a solution to the bark, trunk injection) require great care and expertise, so you should leave the job to a plant protection professional!

Talking to your neighbour about the dangers of invasive species and warning them that the tree they have planted may be a threat to their own plants can be part of the control process.

We recommend field maple or Carpathian walnut trees as native species that can be planted instead.

We hope you find our answer useful.  
Good luck with your plant control!  
Gardening Magazine

## Animal trails

@

Dear municipal services,

We moved to the city a few months ago, and as the winter passed, I noticed that while some municipal areas were well kept, there were patches of untidy vegetation growing here and there. What is the reason for this? We also saw some strange tunnels under the lakeside road, what are they for?

I look forward to your reply.  
Lajos Tóth  
Managing director  
Rendi Kft.

Dear Lajos Tóth,

When planning a municipality, it is important to consider how to diversify the wildlife as much as possible after the development is completed. Connecting different habitats, i.e. preserving or creating ecological corridors through a municipality, agricultural area or road network, is vital to ensure the free movement of the animals living there. We are working to preserve these areas where we live in a way that is beneficial to nature. Animals are defenceless in open spaces, when crossing roads and in developed environments, so when planning the municipal infrastructure we also provided for areas to support migration. The lakeside road intersects with the migration of amphibians to breeding sites in the surrounding woods and fields in spring. As many animals can become roadkill victims, we have constructed frog tunnels in these areas to allow for the safe passage for the majority of frogs. This way there will be enough frogs, fewer mosquitoes, and our beloved returning storks will find enough food during the breeding season. The area that looks unkept has not been left unmown out of carelessness. By planting a natural lawn mix and leaving flowering plants in place, we are ensuring that insects which collect pollen and pollinate our plants have a suitable food source. We also promote the building of green walls and green roofs. Together with the rows of shrubs surrounding the streets and diverse farmland, these provide a suitable habitat for songbirds, which eat many pests. I hope you find our response satisfactory. If you would like to actively support the migration of these animals, please join our spring frog rescue campaign, the dates of which will be announced on social media.

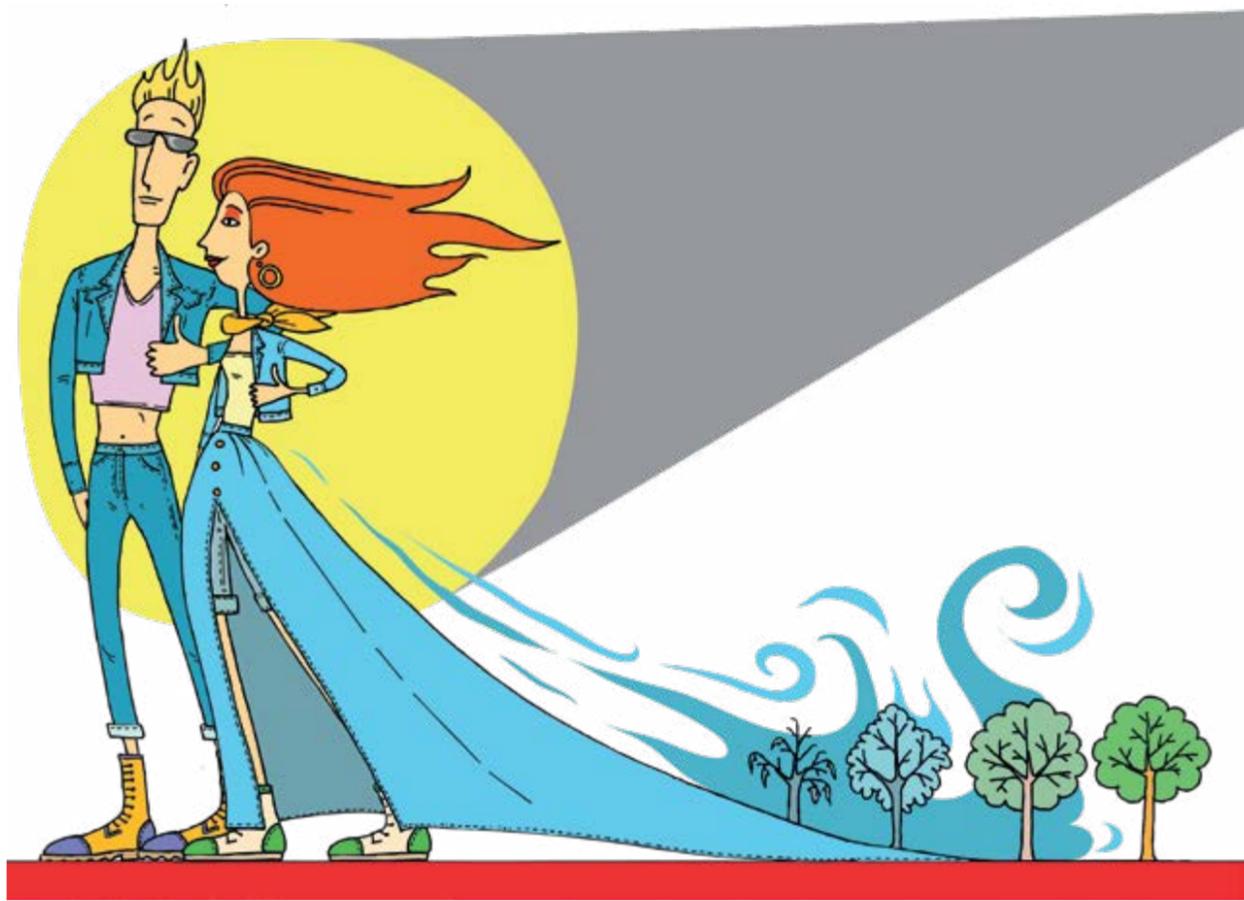
Sincerely,  
Béla Alexander technical rapporteur  
Mezőháza, municipal services





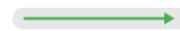
# Looking good!

## Fashion and the environment



### CONTENTS

- ARE WE CONSUMING THE EARTH?
- THE GORILLA AND THE MOBILE PHONE
- BE UNIQUE!
- WHAT TO DO WITH CLOTHES YOU'RE BORED WITH



## ARE WE CONSUMING THE EARTH?

### Ever heard of Earth Overshoot Day?

Overshoot Day is the date from which we start consuming our resources that were meant for the coming years. During the rest of the year, we use up our reserves.

To understand the idea better, imagine that you earn 300 euros, which you have to live on for a month, but you spend it in two weeks. So now you are forced to either use your savings, or borrow money. But if you continue living this way, you'll quickly burn through all your savings and end up in difficulty.



### YOUR TURN!

- Check out which days have been marked in recent years as the Overshoot Day in Hungary, countries of the Carpathian Basin and throughout the world.
- Make a graph based on the data you find. Discuss with your classmates what these figures mean.

### What leads to the overshoot?

In this magazine you'll read among other things about life stories. Because it's not only you who has a story, but also the people who make and sell things, and those who find things in the bin after they break or tear, or their owners get bored of them. And of course, the objects themselves have a life story.



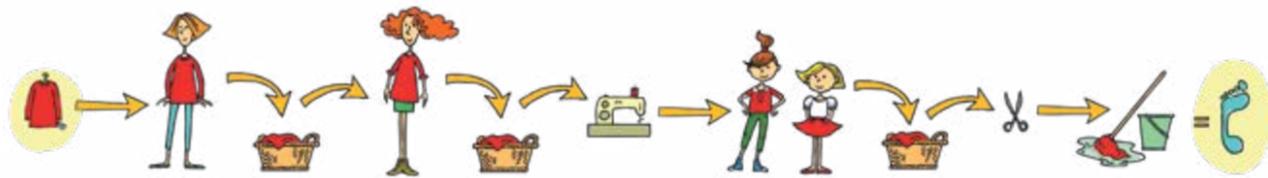
You write part of the life story of your own objects, it's your decision whether to buy – or ask your parents to buy – just what you need, or much more than that. Why do you buy something, or ask for it to be bought? Because someone else has it, or because of advertising? It's worth doing a little research on where a thing comes from, how it has been produced: if its production has a hefty environmental impact, if it has travelled a long way to get to you, and if it soon ends up in the bin, you are contributing to the overshoot.

People's lives changed, and so did their shopping habits, with the outbreak of the coronavirus pandemic in 2019. When it became clear that staying at home was the safest option and that there would be restrictions on opening hours in shops, for example, many people panicked and overstocked on food, cleaning products and disinfectants. Some of the foods with a shorter shelf life unfortunately ended up in the bin.

However, the more forward-thinking people thought of ways to reduce the need to go on shopping trips: they made shopping lists, many asked for home deliveries, and planned what was absolutely necessary. They thought about what to throw away, and how to use what was left. Most people bought fewer clothes and other consumer durables. Travel, especially to foreign countries, fell dramatically.

Being confined to our homes made us realise a lot of things. The packaging materials, disposable masks and rubber gloves accumulated for safety reasons significantly increased the amount of waste. At the same time, people's solidarity and awareness of nature has increased, new solutions have appeared that aim to produce less waste, and a new demand has emerged for consumption and economic development that are more respectful of nature's values and limits. We should continue to use the many useful ideas, good habits and environmentally friendly ways of behaving.

THE WATER FOOTPRINT OF A WHITE T-SHIRT



A conversation with a veritable clothes-saver, Mimma, owner of the famous REHA brand.

*When I told one of my friends I was coming to see Mimma, she exclaimed: You mean the REHA lady? My best clothes are from her! Mimma, what made you want to open a shop like this?*

– I’m a seamstress by trade, so clothes are more than just an object to me, because I’ve experienced the ideas, the effort and the love that goes into them. As long as it’s possible, as long as they can be saved, they shouldn’t end up in the bin. Besides, I read an article a few years ago about how we often only wear a garment seven times. Seven times! I took a poll among my friends, and found that almost everyone has several items of clothing in their wardrobe that they have worn even fewer times than that. I am also a committed environmentalist. So the arguments eventually added up.

– *As I look around, I see you really can buy some amazing stuff here for pennies.*

– That’s right, and it’s our goal to make sophisticated and fashionable items available to people on a budget. But the most life-changing moment was when I learned how much water is needed to make a dress. Just in time, because luckily, buying vintage, retro and second-hand clothes, as well as swapping, is becoming increasingly cool. You see, you can now go to the Oscars in the same dress more than once. For example, did you know that you need 2,700 litres of water to make a T-shirt and 10,000 litres of water to make a pair of jeans?

– *How much?! How does it add up to such an amount?*

– The calculation is based on the entire process of making a garment. For a white cotton T-shirt, you have to include the water used to grow the cotton bush, which accounts for 88% of the T-shirt’s total water footprint. Water is also needed to process, size, dye, print or bleach the cotton, and then finish it.

– *Sorry, what is a water footprint?*

– The amount of water needed to make a product. Because not only do we drink, bathe and clean with water, we need water for everything, even for services. The ingredients for a hamburger, for instance, require 12 bathtubs of water. Moreover, much of the production of clothing takes place in developing countries such as India, Thailand or Bangladesh, where water is already scarce, and during the production processes a lot of toxic substances are released into the wastewater, which damages the entire ecosystem.

– *Do you believe that individual people can influence these processes?*

– If I didn’t, I’d be doing something completely different, she laughs.



BUY FAIR TRADE PRODUCTS!

Fair trade means honest trade. The term is used when the buyer offers better conditions to producers in need. It takes into account the economic, social and ecological conditions of the seller, both when signing the contract and when paying. In such cases, the buyer pays more quickly than usual, or even pays in advance. Given the fierce market competition, supermarkets and hypermarkets dictate such low prices that in many cases they do not cover the real economic, social and environmental costs associated with the product. They employ people for pennies and use child labour, taking advantage of the vulnerability of the people who live there. This aggressive pricing policy leads to the exploitation of producers working in developing countries, the violation of their rights and the destruction of the environment.



Child labour

Cotton and the textile made from it is one of the oldest traded commodities in human history, and also one of the most important raw materials for the textile industry. Statistics show that 100 million households in China and India are directly linked to cotton production.

Many growers are barely able to meet their basic needs, and fall into poverty. To support a family, they usually need 2-5 hectares of land. However, statistics show that an average farmer has 1.1 hectares of land to farm on. Not to mention that everything from adverse weather conditions to low prices affect the incomes of these households. To make their situation even worse, cotton production is subsidised in developed European and American countries.

Fair trade proves that it is possible to dress fashionably while respecting ethical trade and our environment. Fair trade cotton prices help these families increase their incomes and become more stable, so they can plan and invest to achieve higher profits. In fact, there are organisations and businesses that pay a premium in many cases. The Fair Trade Foundation gives these market operators the FAIRTRADE mark. This has serious implications because the demand for fair trade is increasing measurably. There are currently 46,000 producers linked to this organisation from regions struggling with extreme poverty. They receive a premium if they agree to spend part of the extra revenue on causes they consider important to the local community. (The premium is the amount of money above the minimum price.) The producers can use this money to support education, drinking water supply, infrastructure development, medical services, or any social activity that improves the quality of life in their community.



## GREEN JEANS?

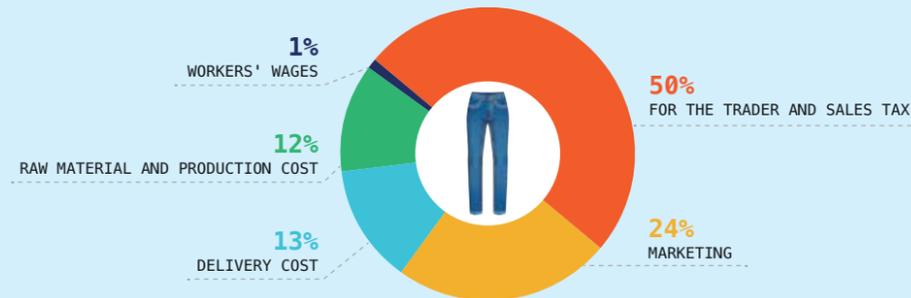
Jeans have gone from being an everlasting piece of hard-wearing workwear to a practical piece of everyday clothing that can be combined with any other item. When you buy that new pair of jeans with a big smile on your face, it's good to be aware of the possible environmental (and social) impact of producing your new favourite clothing.

For every kilogram of cotton used to make jeans, 7,000 litres of water and large quantities of pesticide, herbicide and fertiliser are used. Denim materials are usually dyed with a toxic dye made from tar and various chemicals, and the residues of these can still be found in the clothing you buy.

The industrial water discarded from denim dyeing plants contains heavy metals and neurotoxic substances, and is often untreated, so it severely damages the soil and flowing water, and impairs the health of textile workers. Most jeans are sewn in overcrowded factories in Southeast Asia by people underpaid and overworked, who don't wear any protective equipment.



Breakdown of average price paid for non-fair-trade jeans:



Jeans are abraded with cheap sandblasting, again without the workers wearing any protective equipment in most cases, which causes them to contract deadly silicosis from inhaling the tiny dust particles. This method is no longer officially used, but it is still carried out by illegally employed workers because it is cheap.

Fortunately, more and more companies are listening to consumer demands and changing their production process to reduce the environmental impact and improve working conditions. By consciously buying and using clothes you can play your part in making our environment more liveable, and helping people to work in decent conditions.

Buy fewer clothes, wear them as long as possible, check what the manufacturer is doing for sustainability, visit second-hand clothes shops, and if you want a pair of trendy worn-out jeans, let the passage of time take care of your clothes for you.



## GREEN COMPASS FOR SHOPPING

We can do a lot for sustainability as individuals too. Every product you buy is a choice. Make your choices deliberate ones. Don't buy low-quality, unnecessary items with a short lifespan on impulse. Remember, you vote with your money! Buying sends a signal to the manufacturer or distributor that you need the product. If you choose an environmentally friendly, fair trade alternative, the manufacturer and the shop will be eager to put more of these products on the market, as there is demand for them. If the shop does not stock it, and you know it exists, you can ask the manager or make a note in the customer book (which is not just a complaints book) asking them to get it because it is important to you. When you choose local and seasonal fruit and vegetables over those that come from far away, you are also doing a lot for sustainability. If many people follow your example, the impact will be even greater.



### YOUR TURN!

#### HOW CAN YOU BE A CONSCIOUS CUSTOMER?

- 1. Avoid products with excessive packaging!**  
If you can, shop at the marketplace. If the shop assistant gives you a single-use plastic bag, you can politely decline it. Always carry your own bag, pouch or other container, and use them to take home what you buy.
- 2. Support local products!**  
By buying goods made in Hungary, even if the raw material is not Hungarian, you are supporting the local economy. Look for local brands.
- 3. Only natural!**  
Don't be fooled by advertising slogans and beautiful designs. Read the labels, including the small print, and only buy natural clothes (free of polyester or synthetic fibres)!
- 4. Sometimes cheap is expensive!**  
A pair of shoes that cost pennies and look nice, but end up with a broken heel on the first walk, or a T-shirt that soon sheds the inscription, are not worth buying. Sometimes it's not easy to determine whether cheapness comes with good or shoddy quality. But do what you can! Read the labels carefully. A reliable manufacturer and distributor will provide accurate, detailed information. The aim is to make the goods you buy last as long as possible.
- 5. Don't fall for trends!**  
In the age of fast fashion, the clothes on the shelves of shops are constantly changing. They encourage you to buy items from every new collection, and throw out anything you get tired of. The aim is to persuade you to buy, and spend a lot. Resist the pressure! Set aside the clothes you're bored of. Fashion always repeats itself, and there are some items (styles, colours) that will always be trendy!
- 6. Buy Nothing Day is held every November.**  
Join the initiative and promote it among your friends too.

→ **OPEN YOUR EYES!**

The title suggests that you need to look beyond appearances and understand the underlying intentions. Be a wise customer! The advertising industry applies a myriad of marketing techniques to encourage you to buy.



**FIND OUT!**

**FIND OUT!**

- Before you read on, choose 2-3 advertisements and think about how they have affected you.
- How did the characters, the message, the imagery and the sensation conveyed make you feel?
- Discuss with your classmates whether their experiences were similar.

Which of the following tricks were used in the advertisements you selected?

- **Short supply:** If you don't buy this product now, you'll never get it! Only the privileged are lucky enough to have this product. Join them; if you don't buy it now, you'll miss out.
- **Recommended by celebs:** Would you like to look like the star X.Y.? Buy what they buy! Of course, it won't make your life like theirs, but you'll feel like a star the moment you buy it.
- **Tempting your senses:** The pretty, colourful clothes, objects that are nice to touch, subtle smells, and the pleasantly relaxing music in the shops are all tempting you to buy.
- **Deceptive discounts:** Right here, right now, just for you, 50-70% off. Think about it: if it's still worth it to the distributor to sell it at such a low price, how much did it cost them and how much did they pay the people who produced it?



→ **HOW MUCH DOES A GORILLA PAY FOR A MOBILE PHONE?**

The rainforests of the Democratic Republic of the Congo are home to several endangered mammal species. Bonobos, chimpanzees and mountain gorillas live here. They are less and less safe in their habitat, yet it is not only poachers they have to fear, but also mining, which is threatening the forests of Central Africa.



Mountain gorillas



Bonobos

Almost 40 types of metal are needed to make mobile phones. Tantalum (Ta) is one of them; the majority of its ore (coltan) is found in the Democratic Republic of the Congo. The illegal mines are located in the vicinity of national parks, which have been declared protected due to primate habitats. The mines and the roads leading to them are destroying forests, reducing animal habitats and the populations of endangered species.



PERIODIC TABLE OF THE ELEMENTS

According to a US company that produces recycled phones, one tonne of used mobile phones (10,000 phones) contains 140 kg copper (Cu), 3.14 kg silver (Ag), 300 g gold (Au), 130 g palladium (Pd) and 3 g platinum (Pt).

In addition to the environmental impacts, mining can also have serious social consequences. Illegal mines employ men who work illegally in inhumane conditions for wages of 1-2 US dollars per day. Most mines employ children who are separated from their families and opportunities to learn. In the last 25 years some 6 million people have died directly or indirectly from coltan mining. Since 2020, the nearly 6 billion mobile phone subscriptions on Earth require 1000 tonnes of tantalum per year.

Although international conventions require that tantalum entering the market must come from a legal source, i.e. a controlled mine, this is easily circumvented by smuggling ore into Rwanda and laundering its origin. Rwanda exports more coltan to China than is officially found in the country.

Since tantalum is present in all phones, tablets and GPS devices, it can be recovered by applying appropriate processes. Yet this will only support a sustainable future if it is done in a controlled environment. Only a small proportion of the e-waste collected in Europe is recycled properly; much of it ends up in coastal areas of poor African countries, where the plastic is burned off and the recovered raw material is shipped to China. The toxic fumes produced by the incineration cause permanent health damage to those who burn the waste without protective equipment, as well as seriously polluting the atmosphere.

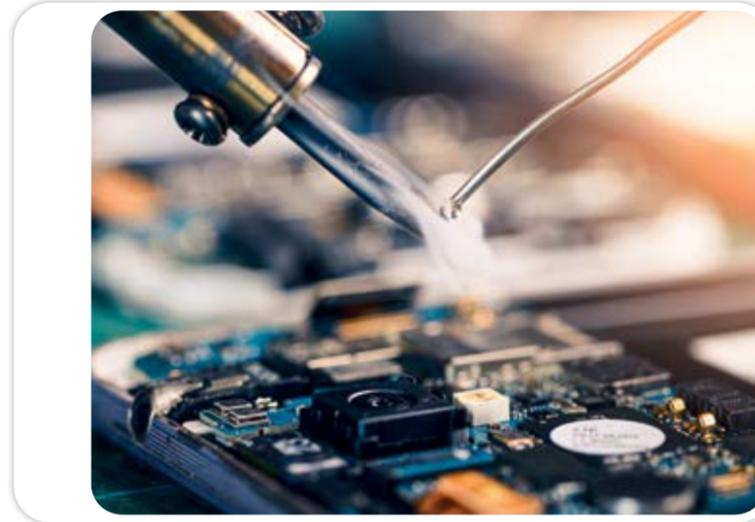


**YOUR TURN!**

You can do a lot for the world and for gorillas just by

- buying fewer gadgets,
- not changing your gadgets just to feel fashionable,
- having broken appliances repaired instead of immediately buying new ones,
- dropping your device off at a recycling point.

→ **DOES A FAIR PHONE EXIST?**



What makes such a device different? Mostly, it should last significantly longer than its fast-wearing 'counterparts' in that it is modular – meaning it can be disassembled into components and easily repaired – but also that its manufacture and choice of materials are conducted with sustainability in mind. The phones are made using raw materials such as tin and tungsten, which are mined in a way that ensures decent working conditions, and there is no child labour or exploitation. Also, the producers strive to reduce e-waste during production and have a reliable and traceable supply chain. In light of all this, it is not surprising that the manufacturer only launches a new model every 2 years (compared to the six-month average of other manufacturers). You have a choice!

→ **ARE YOU HAPPY? Prosperity or well-being**

**Does material prosperity equal well-being – i.e. happiness?**

The well-being of every society is measured by a metric called GDP, which indicates economic performance over a given period, but tells us nothing about whether the people of that country are actually comfortable in their own skins. While a rise in GDP indicates an economic improvement, it only infers that more things were produced and people spent more money in the country during that period compared to the previous period. But this is deceptive. Prosperity alone does not create well-being. Being rich does not rule out being a lonely and bitter person.

**The Happy Planet Index**

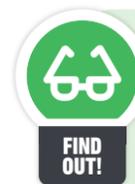
The Happy Planet Index (HPI) is a new indicator of human well-being and development. The metric shows how a country ensures the long-term well-being of its citizens without using more resources than necessary.

The HPI comprises four separate indicators:

1. well-being,
2. life expectancy,
3. inequality of outcomes,
4. ecological footprint.



The New Economics Foundation (NEF), which developed the Happy Planet Index, aims to create an economy that works with the interests of the people and the planet in mind. Why is this necessary? Economic growth is not the solution to the global environmental challenges we are facing. The natural resources available to us are dwindling, while we have only one Earth available to meet our consumption needs.



**FIND OUT!**

- Surprisingly, the HPI's top 10 are not rich, developed countries. On the contrary! 1. Costa Rica, 2. Mexico, 3. Columbia, 4. Vanuatu, 5. Vietnam, 6. Panama, 7. Nicaragua, 8. Bangladesh, 9. Thailand, 10. Ecuador, ... 69. Hungary.
- Do some research on the internet, look at the data for each country and try to interpret it.
  - Why do you think the richer countries are not at the top of the list?
  - Do you think people are really happy in Mexico or Nicaragua? What makes Vanuatu have a low ecological footprint?

### When do we really feel good about ourselves?

According to Nic Marks, one of the developers of the HPI, there are five things we need to do every day to our increase well-being in our lives:

1. **Connect:** Strengthen social relationships, investing energy in loved ones, build relationships.
2. **Be active:** Go for a walk, listen to music, anything that relaxes and recharges.
3. **Take notice:** Pay attention to what's happening in the world, the people around us, the seasons changing.
4. **Keep learning:** Be open-minded and interested (regardless of age).
5. **Give:** Our generosity, our altruism are hard-wired to the reward mechanism in our brain: we feel good when we give.

### WHAT IS ECODESIGN?

Ecodesign is a design method that takes ecological considerations into account. What are these?

- impact of the produced object on the living and non-living environment,
- environmental awareness, and
- economy.

It is characterised by a systems approach to product development, which follows the entire life cycle of the product from manufacturing to waste management.

Ecodesigners use natural materials or waste to create their products. In the hands of a creative craftsperson, a used bicycle part, a seat belt, an airbag, a banner, an old curtain or even a worn white T-shirt can become a valuable raw material. There is a Hungarian company that makes necklaces, bracelets, scarves and even shoes from stripped T-shirts using a variety of knotting techniques. Look out for these products, or follow their example and make your own!



### ZERO WASTING, ZERO WASTE

You probably know a number of ways to reduce waste in the household. One of the handiest solutions is to place packaging waste (usually paper, plastic and metal) in separate bins after use, so it can be recycled and reused as a new product once received and processed by a waste management company.



#### GUESS!

How big a mountain of rubbish do you think is created in Hungary every year?

1. As big as the Gellért Hill.
2. As big as half of the Gellért Hill.
3. As big as 2 Gellért Hills.



If you chose answer 3, you nailed it. Yes, unfortunately, Hungary's annual waste production is the size of 2 Gellért Hills.

#### Zero-waste solutions

What if you don't want to allow any packaging into your household at all? In fact, what if you don't want to produce any waste at all? Is this feasible? According to members of the Zero Waste movement, it is.

Achieving zero waste is almost impossible because there are still products that have not been replaced with others, and unfortunately, their recycling has not been resolved yet either. One example is the receipt you get in a shop, printed on thermal paper. For a long time, this category also included tickets for public transport, but now we can use our mobile phones to present our virtual tickets or passes, thereby taking a step towards reducing waste. It's not easy to recycle textiles, especially mixed fibres or, in many places non-recyclable glass. Instead of recycling, the movement focuses on conscious and environmentally friendly product design, shopping and the importance of reuse (and reuse and reuse...) – in other words, on the prevention of waste.

For example, you can dress by keeping only 2-3 pieces of each type of clothing (trousers, blouse, T-shirt, shoes) in basic colours that combine well with each other, instead of stocking a huge wardrobe. This way you can wear the same white T-shirt with jeans and another pair of trousers or a skirt, or under a sweater when the weather is cooler.



In a packaging-free shop, you can buy flour, rice, sugar, seeds, spices, detergents, soap and cleaning products at their measured weight, even put into your own containers or textile bags. This way, not only do you buy as much as you need, but you can shop in an environmentally friendly way!



## WHY IS IT GOOD TO LIVE WASTE-FREE?

More and more people seem to be experimenting with waste-free living, and for many it is becoming a way of life. Those who have tried it report that they are much healthier than before, and save up to 40% of their annual expenditure. They feel prouder and more relaxed, and they have more free time; they say that they are happier overall.

Nevertheless, changing habits is not easy. At the beginning, it certainly takes time and extra energy to learn about the life cycle and composition of each product, to choose the right ones, to find the right outlets. There are probably not many items of clothing, everyday objects or foodstuffs that do not generate waste during their production or disposal. But, care can be taken to keep waste to a minimum.

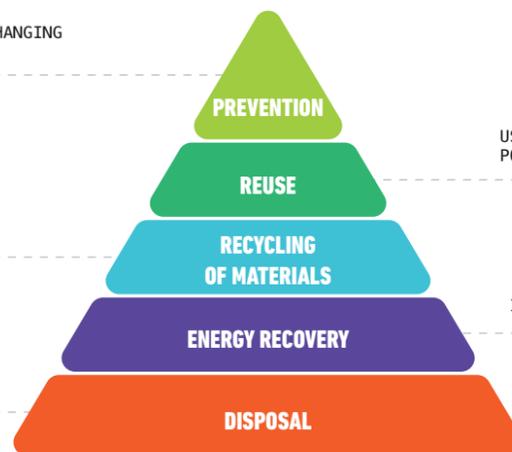
What is the point of a waste-free lifestyle, anyway? It is a continuous effort to produce less and less waste in our daily lives. The good thing about it is you can start at any time, and as long as your bin doesn't remain empty, there is always room for improvement. It's all about weighing up the many factors and making conscious choices.

### WASTE PYRAMID LEVELS OF WASTE MANAGEMENT

PREVENTING WASTE GENERATION BY CHANGING ATTITUDE AND LIFESTYLE

REPRODUCING SAME TYPE OF PRODUCT FROM RAW MATERIALS VIA SEPARATE WASTE COLLECTION

DISPOSAL IN LANDFILLS OF WASTE NOT SUITABLE FOR FURTHER USE



USE OF VARIOUS PACKAGING FOR NEW PURPOSES, THUS DELAYING WASTE GENERATION

ENERGY PRODUCTION (HEAT OR GAS) IN INCINERATORS OR SPECIAL LANDFILLS

THE AIM IS TO REDUCE OUR HARMFUL IMPACT ON THE ENVIRONMENT BY MOVING UP THE PYRAMID.

#### Prevention

"The best waste doesn't ever get produced." Prevention sits at the top of the waste pyramid, and we can find ourselves there every time we manage to reduce the contents of the ecological backpack we carry (figuratively) on our backs.

We don't buy anything unnecessary on impulse, and we avoid packaging materials. We use our own water bottle, our own bag, our own box, our own cutlery and metal straws instead of disposable, throwaway, single-use items.

#### Reuse

One example of reuse is reusing returnable bottles without converting the material; the same happens when we buy and sell used tops through shops selling second-hand clothing, or older electronic devices through shops selling second-hand mobile phones. Reuse also happens when our white T-shirts are re-purposed as bags and storage sacks.

#### Separate waste collection

Collecting waste separately is becoming increasingly popular. Developing and improving this is essential in a circular economy. The waste collected can be recycled to different degrees after sorting. Paper, most metals, glass and some plastics are highly recyclable. Recycled aluminium requires 95% less energy than the same amount of aluminium extracted from bauxite, and it can virtually be recycled an infinite number of times.



That is, of course, if there is a processing plant for the material. The quality of paper pulp deteriorates after each recycling, but it can still be kept in circulation for a long time. Separating plastics is still a major challenge due to the many different compositions of plastics, and there are more and more initiatives for textile processing, but natural fibres mixed with plastics are the biggest problem. It is therefore important to think about the "final destination" of the product during the design, production and purchase stages.

#### Energy recovery

Unused waste can be burned in incinerators and converted into thermal energy. This is one step better than landfilling, but isn't really environmentally friendly. The harmful emissions are not eliminated even when smoke filters are installed on factory chimneys; instead, they accumulate in the filters and the residual end-product, and have to be disposed of, often as hazardous waste. The energy balance of the process is also much worse than that of recycling.



#### FIND OUT!

- Find the nearest waste-free shop near your home. Let's go on an adventure!

#### Landfilling

Landfilling is the least economical and most environmentally damaging because, just like incineration, it wastes valuable raw materials.

#### Prevention is the best solution!

But why all the fuss? Let's think instead about whether we really need that fashionable item of clothing that will no longer be trendy next year. What if durability was the first consideration the next time we need a mobile device? How can we measure our "non-generated" waste most efficiently?



#### YOUR TURN!

Find out how you can dress in many ways with just a few clothes.

- Choose 2 of each type of outerwear at home, 8 in total. (For this purpose, you can only choose from your own wardrobe; you can't buy new clothes!)
- Make up as many outfits as you can from the 8 items of clothing. Take photos of the outfits.
- Organise a fashion show at school with the best combinations!

PLANNED OBSOLESCENCE



Have you ever found that your gadget – be it a mobile phone or tablet – dies just after the warranty expires? What a coincidence! But is it really? If it's not just bad luck, then it will probably be planned obsolescence, which is the manufacturer's way of telling you to throw away the bad gadget and buy a new one. And the result? Increasing amounts of electronic and electrical (E+E) waste. Moreover, rare metals are needed (and in ever increasing quantities) to make these devices, the mining of which generates new environmental problems.

Light bulb conspiracy

On 23 December 1924, the leaders of the major electronics companies gathered in Geneva to form the Phoebus cartel, which changed the world forever. Under their secret agreement, the organisation would rule the world's light bulb market, each working with a fixed number of items in its own national and regional zone. Their shared mission was to make light bulbs that lasted for shorter periods of time, instead of the previous 2000-2500 hours. To solve this problem, the cartel members came up with the solution that the light bulbs should last no more than 1000 hours. Anyone who deviated from this could be fined. Hence they created the concept of planned obsolescence with the aim of increasing sales.

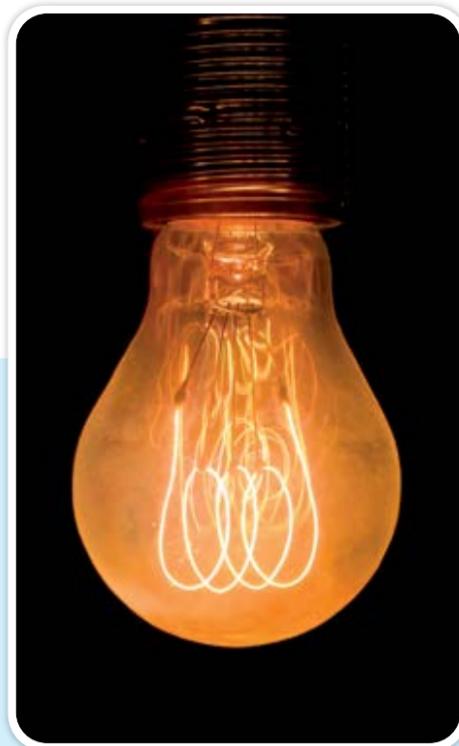
And how long does a light bulb actually last? Well, at the Livermore fire station in California, one of the bulbs has been in operation since 1901. The bulb, made by the Shelby Electric Company, embodies one of the greatest fears of modern industry – that something works too long and too well, and that people don't buy new ones. The 119-year-old bulb can be viewed via a webcam.

The camera has had to be replaced several times because it broke down, but the bulb still won't give up.

What is the European Union doing to combat planned obsolescence?

The European Union's Circular Economy Action Plan aims to encourage reuse and recycling, to end the age of disposable products. Among other things, it requires the provision of appropriate information, for example, on the durability and reparability of a product. In other words, it wants to give EU citizens the right to repair.

Another directive has been designed to regulate the recycling of waste electrical and electronic equipment (WEEE, or e-waste). The aim of the directive is to contribute to sustainable production and consumption, for example by reducing the amount of e-waste that will be disposed of and promoting the use of secondary raw materials extracted from e-waste.



ANTI-ADVERTISING HOROSCOPE

The universe is telling you that you are an individual!



Aquarius

This week is like all the others. You'll carry home a box of plastic bottled mineral water, and only when you arrive will you remember that your home has healthy, drinkable water running from the tap. Is it worth paying for something that's available for free in your area? According to the logic of advertising, it is. What do you think?



Pisces

Swim against the current! Don't accept what many advertisements suggest, that you can only express your individuality by consuming mass products. Start the week by exploring artisanal and recycled products!



Aries

Ultrasonic nail file? Melon-flavoured baseball cap? Advertising often encourages you to consume products and services you don't need. Don't run headlong into the wall like a ram! This week buy something again that benefits you and the environment.



Taurus

Don't believe false promises in advertising! A dietary supplement may actually be good for your biceps, but don't try to stop a bull with your bare hands! Go jogging instead, as it will strengthen your calves, the bull won't become irritated, and you'll save your money.



Gemini

This week's promotion is a "buy one, get two" deal on your favourite pair of jeans. You're about to convince your parents to make the purchase when you remember that you could only wear one of the two pairs of jeans you bought in last year's sale because you grew so fast. If you had a twin, or four legs, it would be worth it, but this way?



Cancer

The aim of advertising is to encourage people to buy. Like a crab, take a step back and consider that cutting back and refusing is the truly responsible consumer behaviour from an environmental point of view. Don't accept plastic bags when shopping this week!



Leo

Advertising can serve good causes! Many organisations are supported by fundraising campaigns to help endangered species such as the lion. Learn about one of these organisations this week. But be careful if Scorpio is your rising sign!



Virgo

Advertising targets us from an early age, when we can't even decide whether we should buy a product or not. It can determine our eating habits for a long time, just by printing smiling fairy-tale characters on food packaging. This week, be bold and eat something you've never eaten before!



Libra

Advertising suggests that shopping is an exciting event in itself. But finding a parking space, queuing, and pushing around trolleys in crowded department stores is not a very meaningful pastime. Surely you can find something better to do this weekend. Weigh up the options!



Scorpio

Some advertisers abuse our good faith and, like a scorpion, attack us at our weakest point. They soften our hearts and make us open our wallets with heart-breaking images and false stories, while using the proceeds for their own and not the community's benefit. Check out the advertisers before supporting them!



Sagittarius

Advertisers target you deliberately. They tailor their messages by mapping out your habits, craft them to artificially arouse your desires, and deliver them to you with arrow-sharp precision. Shield yourself against manipulation! Be conscious and responsible in your choices every day of the week.

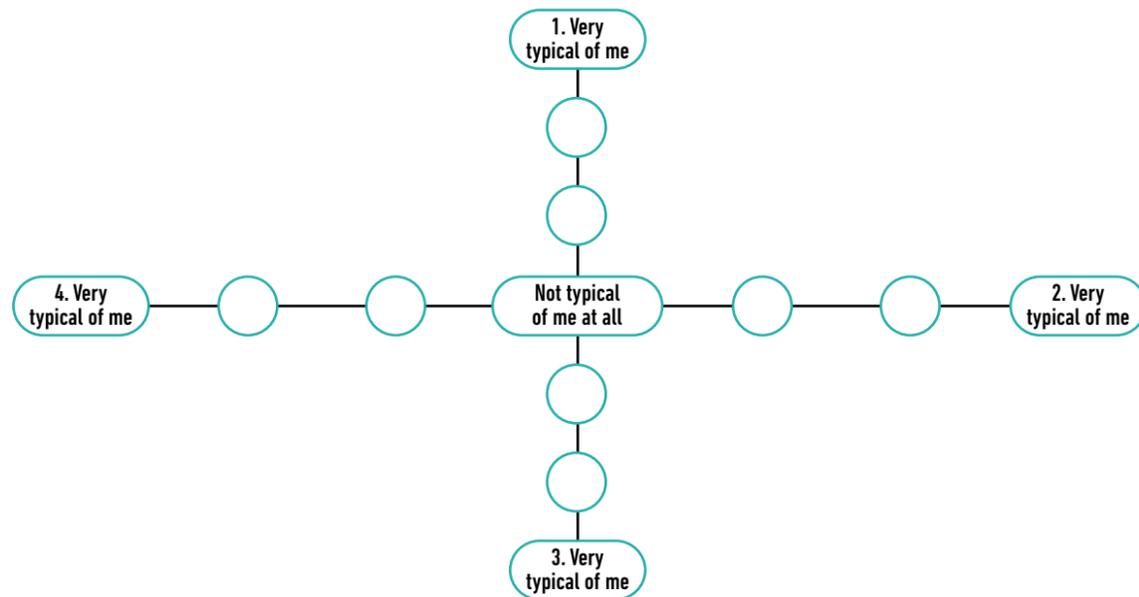


Capricorn

On Sunday you get a puncture on your bike, but you don't rush to the store to buy a new inner tube. Advertisements try to convince you that if something breaks, you must buy a new one, even though this time, a puncture repair kit and a stand will suffice.

## WHAT TYPE OF CUSTOMER ARE YOU?

When we shop, we don't wonder which customer category we fall into. By filling in this test, you can find out which type you are closest to. Draw the diagram below on a sheet of paper. Read the statements below the diagram, and mark on each axis how typical you feel they are for you. The scale ranges from *not typical at all* to *very typical*!



### Statements

1. Often when I feel bad, I go shopping and console myself with one or two little things.
2. I believe in "love at first sight". I see it and immediately feel that I have to have it.
3. I have always bought this brand. I don't really know why I should change now.
4. I usually go to the store with the intention of buying something specific. I have a shopping list, whether it's on paper, in my head or on my phone. I never deviate from that.

Look at the diagram you got. At which statement does it peak? When you're done, read the attributes you've collected. Compare your diagram with the answers of your friends and classmates.

### RESULTS

1. **Emotional customer:** The thing you buy, or shopping itself, brings you pleasure, temporary elation, satisfaction. Downside: You later realise that you don't need the product you bought, so you spent your money unnecessarily.
2. **Impulsive customer:** You convince yourself that a product looks good, or is cheap, or has been discounted, or you've seen someone else who has it. You quickly identify a reason and buy it. Downside: And then the next day, the argument isn't so strong, and you don't like what you bought anymore. Oh, and you've run out of money... why exactly?
3. **Brand-loyal customer:** A brand has a certain feeling, image and style attached to it. It makes you feel better. You identify with the brand, you buy the new trends immediately. Downside: Whether it suits you or not, whether you can afford it or not, you buy it.
4. **Conscious customer:** You know what you need, and what you can afford. You focus on the goal, don't browse too much, and decide quickly based on the quality and price. Downside: Many people don't understand why you shop so quickly and rationally, and why you don't buy what you haven't included on your list.

## MOBILE PHONE OR BRICK PHONE

Did you know that when mobile phones were first introduced, they were called "brick phones"? Although the name has fallen out of fashion, as have the giant, half-kilo devices, you can avoid being as thick as a brick by being mindful.

### What not to do?

As a general rule, don't use your phone when you might disturb other people.

- With others or in public places, such as public transport or shops
  - turn off or mute the ringtone;
  - if you talk to someone, don't do it loudly or shouting! Nobody wants to know how stupid Steve was, or how good-looking Polly is, or what your blood count is. If they do, that's even worse!
- If you are in any social situation, don't keep thumbing your phone, and take the earphones out of your ears! Everyone feels awkward if the person they're talking to glances at their screen every two minutes, sometimes laughing, sometimes rapidly tapping away at the keyboard. Such behaviour sends the message that you're not interested in the other person. It's very annoying, as you've probably experienced yourself.



DID YOU KNOW?

### DID YOU KNOW?

- The clothing industry is responsible for 8–10 percent of greenhouse gas emissions. We wouldn't buy so many clothes if these gases evaporated straight out of them!
- 3.7 billion euros of unsold clothes were burned in 2018.
- An adult drinks roughly 2,700 litres of water in two and a half years, including their daily fluid intake (e.g. drinking water, soup, tea, etc.). This is equivalent to the amount of water needed to make a cotton T-shirt. And we can't even drink a T-shirt.
- 73% of textiles produced end up in landfills, even though a large proportion of them could still be worn, used as machine-cleaning clothes or bedding for animals.
- On average, 30 kilograms of textiles are thrown away per person per year in the United States and Britain.



## IS YOUR ECOLOGICAL FOOTPRINT TOO BIG? Do you want a smaller one? There is a solution!

People in developed countries in particular have a pathologically big foot. This mutation spreading like a pandemic is threatening the entire planet. By consuming more of nature's treasures than their per capita consumption, people with a big footprint are overburdening the Earth's ecosystem. A big footprint occurs where consumption rates are high, and where renewable energy, proper waste management and water use, environmentally friendly transport, and a preference for local products do not offset the use of the Earth overall in these places. It could be argued that if everyone led a similar lifestyle, ten Earths would not be enough to meet the demand. Fortunately, there is a remedy: with responsible consumption and an environmentally conscious lifestyle, we can reduce our overly large ecological footprint to a healthy level for the sake of the Earth.



### YOUR TURN!

How can you reduce your ecological footprint?

Collect tips and ideas. Draw on your previous studies and what you have read in this magazine about the ecological footprint.

YOUR TURN

## GREEN COMPASS FOR YOUR CLOTHES

Garments made from organic cotton, using environmentally friendly processes and under quality working conditions are certified by international certification schemes. Buy these items if you can; they are more expensive, but less harmful to the environment. Used jeans are accepted by many companies, and with clever designs a wide range of utilitarian items from bags to furniture covers can be made by recycling this strong material.



- The production and laundering of clothes has a major environmental impact and produces an incredible amount of waste. But the good news is, this can be reduced.
- Don't buy anything unnecessarily! Look around second-hand shops and swap shops first. Second-hand clothes are becoming trendy, not as a symbol of poverty but of environmental awareness.
- Buy clothing made of one type of material, preferably natural. Mixed fibres are difficult or impossible to recycle. Make sure that the used material ends up at the right collection point.
- Look for products made by responsible companies and businesses. If you can, pay attention to prices and how the companies operate.
- Wash your clothes sensibly, use environmentally friendly detergents, always fill the machine up full with laundry, and if the machine has such a function, then set the appropriate amount of water and heat and choose an environmentally friendly setting!

## WHAT TO DO WITH CLOTHES YOU'RE BORED WITH OR HAVE GROWN OUT OF?

### Donate them!

If the garment (or bag or accessory) is still in a good condition, the easiest way to give it away is to exchange it among friends or relatives. Of course, you can expand the circle and even organise a wardrobe sale with friends or neighbours. Remember! What is worthless to you may be a treasure to someone else!



### Drop them off at clothing collection points!

If you want to give your outgrown, slightly worn clothes a new life, drop them off at clothing collection points. They will be used by so-called eco-designers to make new clothes, bags or even home furnishings (carpets, sofa covers, poufs).

They also often place collection boxes in schools and workplaces, so they come to people to collect the 'waste'. Make sure you always put your unwanted clothes in the clothes bin after washing them! The Hungarian Red Cross has clothes collection bins available in all cities, usually in highly frequented areas, near large supermarkets.



If they are still usable, the clothes placed in these bins are washed and sent to those in need. If they are tattered or torn, they end up as industrial cleaning cloths or fillers.

### Take them to a scrap yard!

Textile waste can also be dropped off at scrap yards. From there, they are sent to domestic recyclers to be made into yarn and industrial cotton wool for example.

### Charity shops

We've already talked a lot about what you can do with broken electronics and electrical appliances, or where to drop off your worn-out clothes you're bored with. But what can you do if you have old and used items (books, furniture, toys, etc.) that you no longer need, but they are not in a condition to be thrown away in a recycling bin or municipal waste bin? You may find yourself in this situation when moving house, or even when settling an estate following a death. Charity shops, of which there are already a growing number in Hungary, offer a solution to this problem.

Charity shops are places where items that are still usable can be bought below market price by those in need. This way, waste is reduced through extending the lifespan of the items and equipment by reusing them. So they don't end up in the waste bin, and then in the landfill or an incineration facility.



Hence charity shops also contribute to environmental and social sustainability in the spirit of social responsibility. The donor does not accumulate unwanted products, and the customer can buy good quality items at low cost. These shops also create employment opportunities for people who are excluded from the labour market, as they employ people who would find it difficult to find work elsewhere because of their age or low skill levels.



### YOUR TURN!

- **Can you recycle plastic into a fashion item?**  
Give your own examples of how plastic or synthetic fibres can be recycled in the fashion industry, in up to 5 sentences. (We're not only talking about the clothing industry here: plastic can be used to make bags or home decorations too.)
- **How can used clothes become a raw material?**  
The method is different for organic and inorganic materials (e.g. wool or polyester). You can find examples by searching the internet.

### GREEN COMPASS FOR YOUR PHONE



Using your mobile phone can also be green if you follow these tips:

If you are too dependent on your phone, gradually wean yourself off using it frequently, and use it only to a necessary and healthy extent! Here are 7 steps to lower your dependence.

- Step 1:** Instead of looking at the screen, look out the window and see what the weather is like. The weather forecast, of course, is a different matter.
- Step 2:** If you have a wristwatch, use it! That way, you don't have to pull out your phone to get the exact time, and risk being distracted by the incoming messages and getting lost in the information overload.
- Step 3:** Try to eat without your phone being close at hand.
- Step 4:** Turn off the features that notify you when you've been messaged, liked or commented on. Only check these when you want to focus on them.
- Step 5:** Set the "Please do not disturb" message for a few hours during the day.
- Step 6:** Schedule a "web-free" day during the week, when you use your device for calls only.
- Step 7:** Ask a family member to hide all the phone chargers in the house from you for a few days.



The Jane Goodall Institute recycles collected mobile phones and tablets under controlled conditions as part of its campaign entitled THE FOREST IS CALLING. You can set up a collection point at your school or local library once you have contacted the institute.  
Find out where you can drop off your used devices.

**OUR HABITS**  
Take a poll among your friends.

Based on what you find out, write down statements that you think characterise environmentally and socially responsible consumption.



**YOUR TURN!**

- Ask at least 10 people how typical your statements are for them. Draw up summary statistics of the results.
- In the columns, write the numbers that show how many of the 10 people said that a certain statement is typical, and how many said that it is not typical of them.
- Discuss with your classmates what could be done to make you an even more environmentally friendly shopper!

Some examples of statements:

	Typical	Not typical
I never go anywhere without my mobile phone.	people	people
I look for fair trade products.	people	people
I always buy the latest mobile phone model.	people	people
I like to wear and buy second-hand clothes.	people	people
I take my old phones to the designated collection point.	people	people
I donate my clothes that I don't wear anymore but are still in good condition.	people	people

**I'm not myself!**

You have a new message

To: Green Planet Editorial Office-

From: Kati M.

Subject: **I'm not myself!**

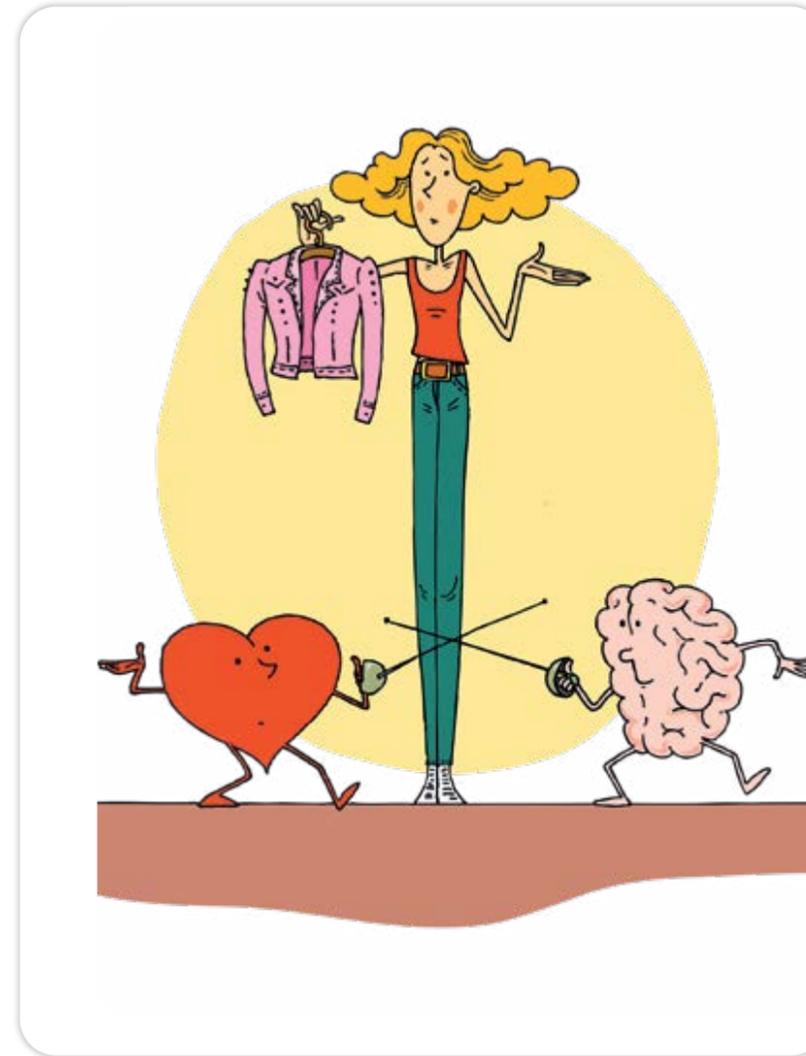
Hi,  
This might sound bad, but I'm afraid something is wrong with me. Whenever I go into a clothing store, even when I want to buy something specific, I fold. I mean literally. By the time I get to the cashier I have all kinds of things in my cart, even some that I will later give away as presents or throw away. I am in constant financial trouble because of this. Am I a shopaholic? Help me! Psychologist? I hope you can give me some advice!

Kati M.



Dear Kati,

Don't blame yourself, you've just fallen victim to the tricks marketers have been using for ages. This is called 'impulse buying'.



People often buy according to momentary desires, impulses and moods, putting aside reasonable buying behaviour. The main goal of supermarkets is to awaken these impulses, make us forget our common sense and persuade us to buy products we don't really need. What can you do to avoid this?

Think about our ideas and choose the one that best suits your personality. You can also choose a solution for the situation you're in:

Avoid supermarkets and shopping centres – only go there if you can't buy the product you're looking for anywhere else.

Avoid online shops – remember it's much easier to shop from the comfort of your room, so you're more likely to make a snap decision. However, you should also remember that you can return goods bought online that don't fit or you don't like, within 14 days, without giving a reason.

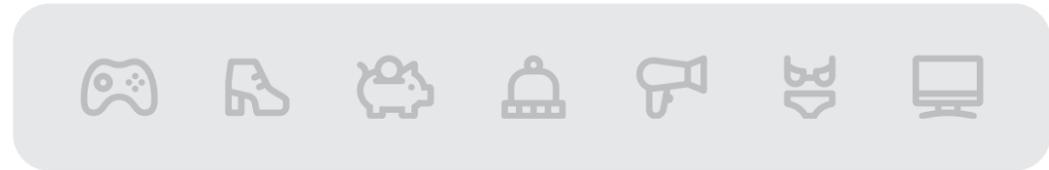
If you feel that you really need a product, put it on a list. If you still feel that you need it after a few days or a week, it's time to buy it. Don't do it any other way!

Ask yourself questions. Write on a piece of paper, "Do I really need this?". Then write arguments for and against. Your answers should always be honest. Don't lie to yourself! If the arguments for accumulate faster and outweigh the arguments against, it's worth buying.

Calculate what it will cost you – try to convert the price of the product into an hourly rate. Especially for more expensive products, it is worth considering how many hours or days you will have to work for it. How many hours of your life do you give up to be able to get it? Is it worth it?

Make a monthly budget. Write down your income and expenses. Categorise your expenses (utilities, transport, food, clothing, etc.). Look at a month when you've saved a lot, and try to budget your purchases similarly the following month.

If you think these through, you'll stop making rash decisions and you'll be proud to say that you're no longer an impulse shopper.





# I feel at home in my home

## Apartment, building, municipality



### CONTENTS

- ANIMAL BUILDERS
- THE NEIGHBOUR HEATS WITH WASTE
- BUILDING MATERIALS FROM THE FUTURE
- DESIGNED BY NATURE

### YOU'LL SHOW THEM HOW!

Every day, you hear:

- Turn off the tap for goodness sake, the water's running out!
- Unplug that charger! My patience is running out, not the battery in your phone.
- Why is the light on? I can see more than I want to. It would be nice if you tidied up.
- Throw that plastic junk in the recycling bin!
- Go on your bike, at least that doesn't stink! Think of grandma's asthma, or your sister in the pram. Of course you're not in the pram, but you understand, right?
- You really want to turn on the washing machine for one pair of jeans?

I'm bored of hearing these all the time, says Anikó (16). – I will have children, and my children will have children; yes, yes, I'm not just doing it for myself, I know. Tell me what I should do to make it all work by itself, to have a smart home, maybe a super grass-covered Hobbit house, where I don't have to pay attention to every single switch, or make my life more environmentally conscious step by step.

Relax, it will happen! Until then, just dream about what would happen if 7.6 billion people suddenly said, "I'll pick up this one piece of litter." Right? The Earth would be cleaner.

We can all do something to tackle environmental problems in our homes, our local communities, our schools and our workplaces.

### PAPER FURNITURE, BUT NOT A DOLL'S HOUSE

Once upon a time, somewhere in Vas County, a stationery retailer called László Nagy had a great idea and said, 'Waste paper is just the thing to turn into furniture!' Many doubted the success of his new venture, but they were wrong.

– It was a bold move! What made you think of it?

– It's not an original idea (he laughs). – In Hungary, there are already more than a hundred companies involved in waste recycling, and even universities are doing a lot of serious research in this field. I'd been thinking about similar things for a long time, as I'm a committed environmentalist.



- I would think twice about throwing myself into a paper armchair.
- You can do it in ours though. Believe it or not, they're very strong. We make our furniture from scrap cardboard, they are durable and hard-wearing. Besides, you can decorate and colour them with recyclable materials to your own taste.
- If it gets damaged, do you throw it away?
- As paper, it can be recycled again. So there's no waste and the pulp is kept in the economic cycle.
- Is this what we call a circular business model?
- I can see you came prepared (he smiles). - I'm not an economist, but you can't just jump into a business without thinking first. Yes, it's called a circular model, or more precisely one of them, because there are several. I've constantly been studying the possibilities. If we just consume and consume, we will devour our world, nature and our living conditions. Natural resources are dwindling, and new raw materials are becoming more expensive. We are overwhelmed by rubbish, we need more and more land to dump it on, while transport and disposal are also becoming increasingly expensive. It is therefore not only a matter of vision, but also of economic necessity and environmental protection.
- If you had to sum up what the circular model is all about, what would you say?
- It is an economic model in which non-renewable materials circulate in a closed system, meaning that waste produced at every step from production to use and then to waste can be reused and recycled as raw material, again and again. Material efficiency and the separate collection of waste generated are essential elements of production. One important element of the model is to create the product from the design stage in such a way that it is durable, repairable and recyclable. Perhaps the most important contributing factor to this process is the public, as the purchase, repair and re-use of the product ensure that it is put to the best possible use.

Unfortunately, paper and pulp cannot be recycled indefinitely, so we do what is called upcycling. We recycle the waste paper collected from our partners, maintaining or improving the quality of the material. We use the sorted waste paper to make unique handmade cardboard furniture, lamps and vases.

Looking around the huge warehouse, - *What things are made here?*

- We make furniture for homes, offices and shops, and even custom exhibition stands. These pieces of furniture convey a new lifestyle, they slip unnoticed into people's lives and inspire environmental awareness. I see a growing trend to buy environmentally friendly products. Thankfully, we are popular.

- *Is that enough for success?*

- If success is not just about my company's business success, but about thinking big, then we need legislative conditions as well as strategies clearly pointing the way forwards, incentives for innovation, as well as public and private investments to accelerate the uptake of resource-efficient technologies and systems.



**FIND OUT!**

- See how many circular business models are out there.
- Choose a circular business model and show it to your classmates.

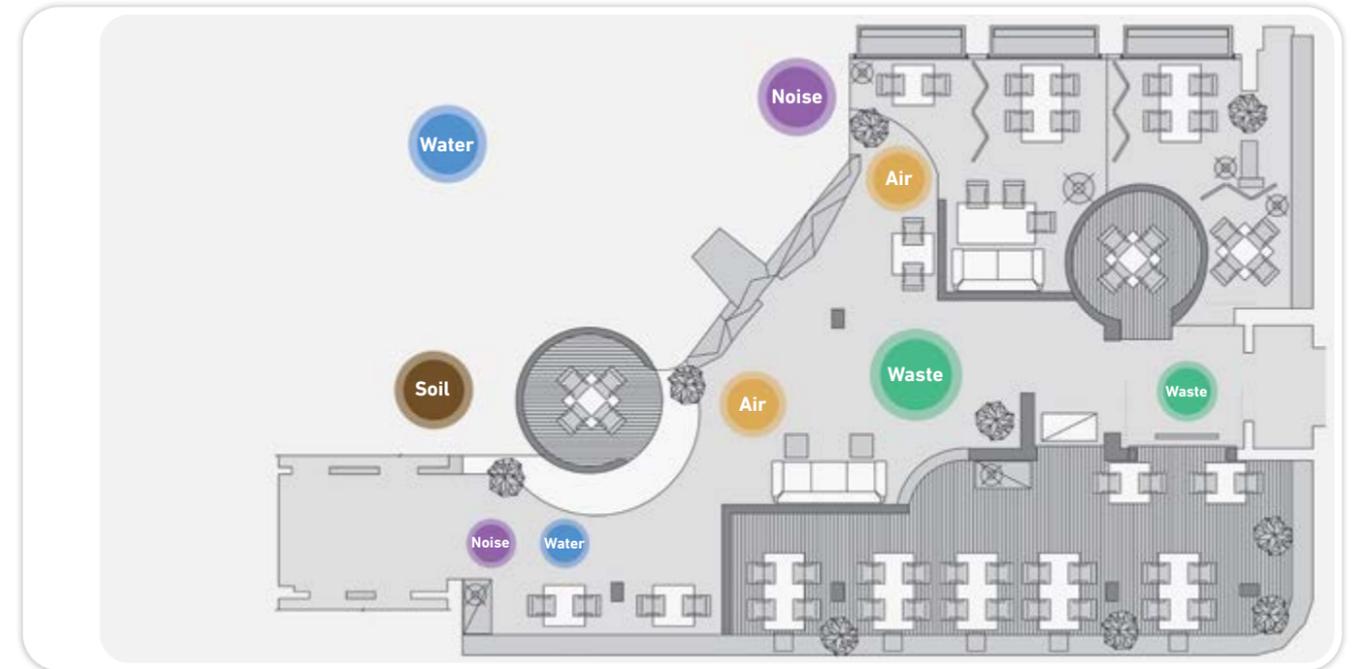
**ECO-MAPPING**

The eco-mapping of buildings originated in industry, where they assess the environmental impact of a plant's or a company's operations. The results are depicted in graphs, so it is easy to see what is adequate and what needs improving. The aim is to minimise the energy, water and waste involved in maintaining the building and to meet the requirements of sustainable operation. The tenth-graders of a secondary school in the lowlands of Hungary have taken on a big challenge, creating an eco-map of their school as a project, and in doing so have turned the life of the school upside down.

I interviewed Sári, Kata and Kristóf, members of the project team.

- *How did you get started? It takes a bit of know-how, doesn't it?*

**Sári:** The idea itself didn't come from us, but from our form teacher. Since the project has a tangible benefit, we really wanted to do it. First we chose where and what to investigate.



- *What were these?*

**Sári:** Energy saving and communal spaces. In these two areas we assessed what was working well in the school and what needed to be improved. What can we change as students, what needs the support of the school management, and what investments should be made by the school's operator.

- *How did you then organise your work together?*

**Kata:** We had a final deadline, so we needed to set the dates for each task counting back from that. - *In other words, a timetable was drawn up. But before the timetable, you also had to define the subtasks and responsibilities, didn't you?*

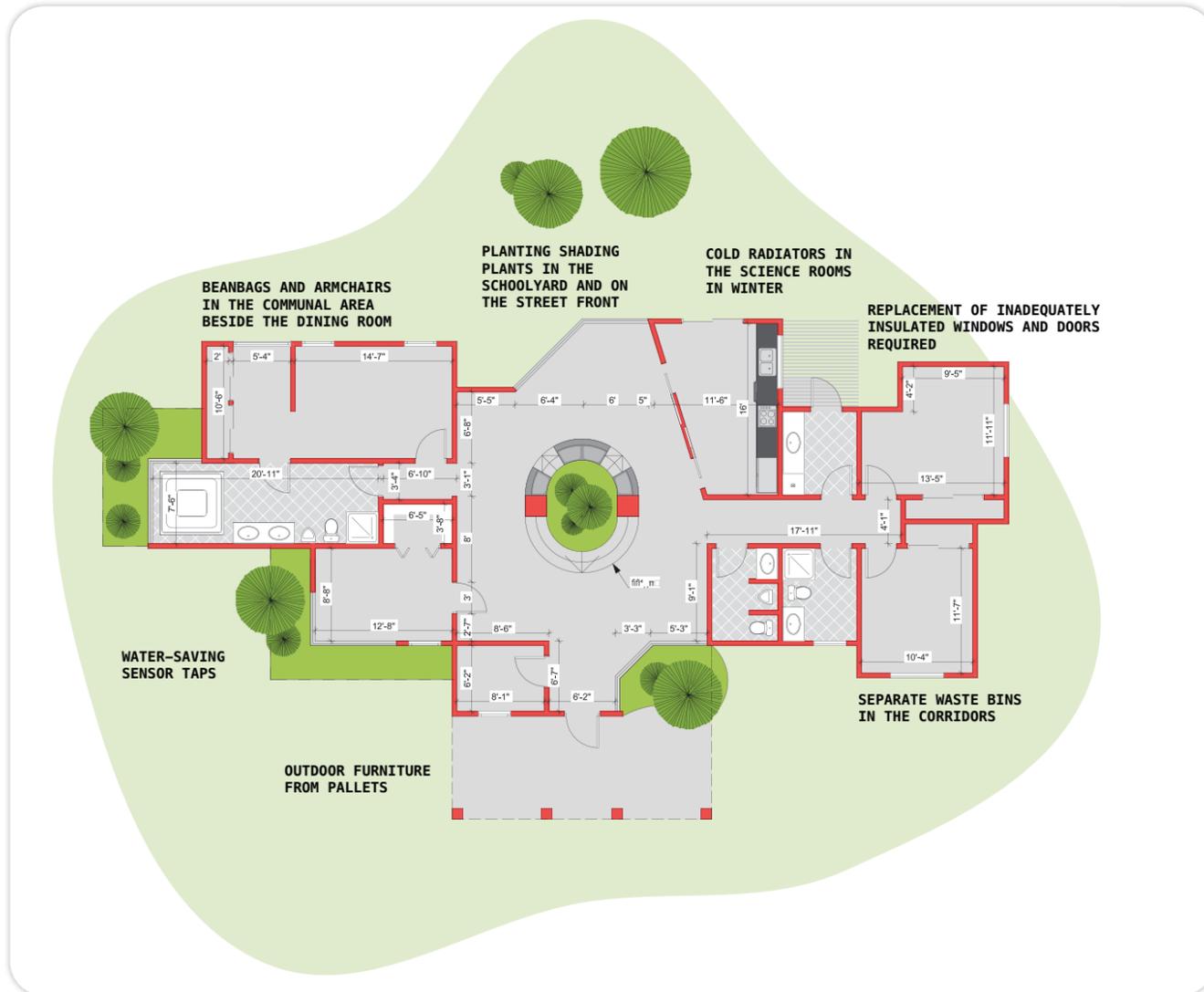
**Sári:** Yes, of course. What's more, we read a lot about how an ecomap is made, what the process is, what the main aspects are. We also collected literature, which we put on the shared drive with our own files and photos for everyone to access. And the non-personal communication took place in the usual class group online. And then...

**Kristóf:**...we discussed the criteria for the survey, so what should be on the map in the first place - added Kristóf. - For example, it is always very cold in the physics room in winter, partly because the windows don't close well, and partly because the radiators are only lukewarm. In the Hungarian room, on the other hand, they are boiling hot, and even in the coldest weather you have to open a window, so we heat the street, to quote Miss Tóth. We wanted to indicate these on the map, to have them ready if the modernisation of the heating and the replacement of the windows and doors make it onto the agenda. If funds become available, solar panels could be installed on the flat roof, and insulating the building could also result in significant savings.

– OK, these are longer-term plans. Do you have anything planned for the near-future?

**Sári:** Yes, and they have been included on the map. Such as using your own water bottle, reusable glasses in the cafeteria, and paper- and ink-saving settings in the student photocopier, greening the schoolyard and student lounge, and upgrading the lighting. Good things have happened in the school before of course, such as separate waste collection and sensor taps in the toilets. We also talked about maintaining and improving these.

**Zsófi:** By the way, we not only looked at the school building but also at the surrounding area from a sustainability point of view. For example, we would like to put in shading plants in the sunny parts of the schoolyard (which could be planted by the graduating classes as a farewell ceremony for example, instead of releasing balloons), and we have planned garden furniture from pallets too. We also have ideas for renewing the communal spaces within the building.



– How have your survey and ideas been turned into a map?

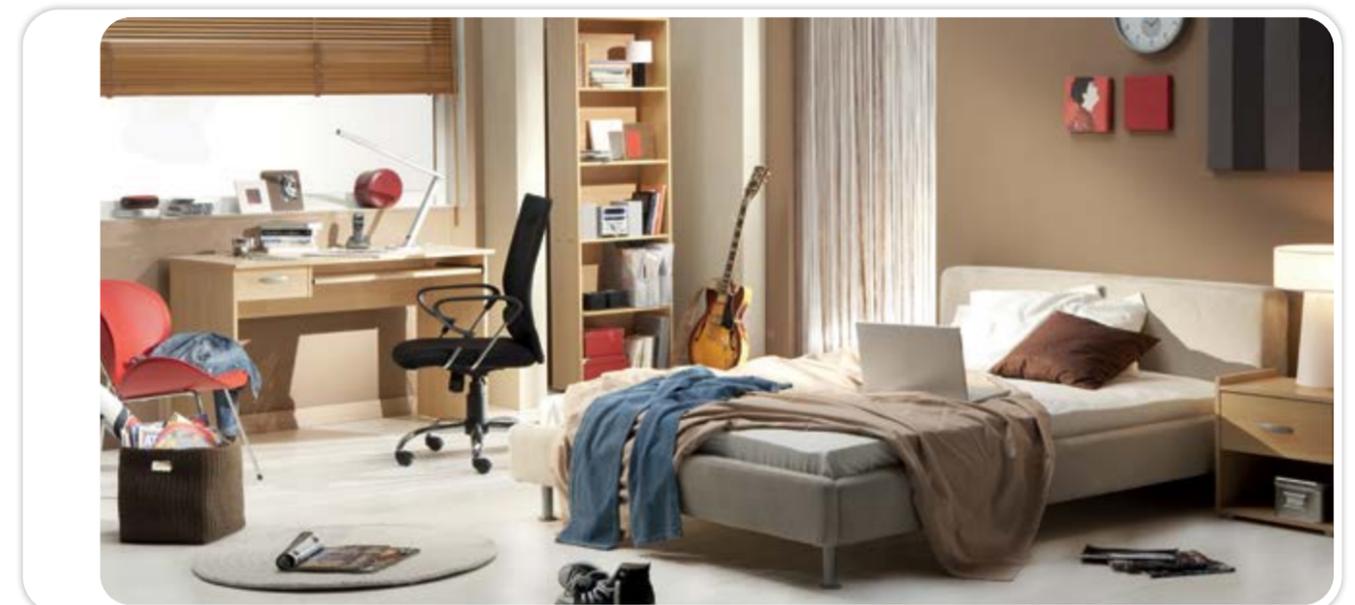
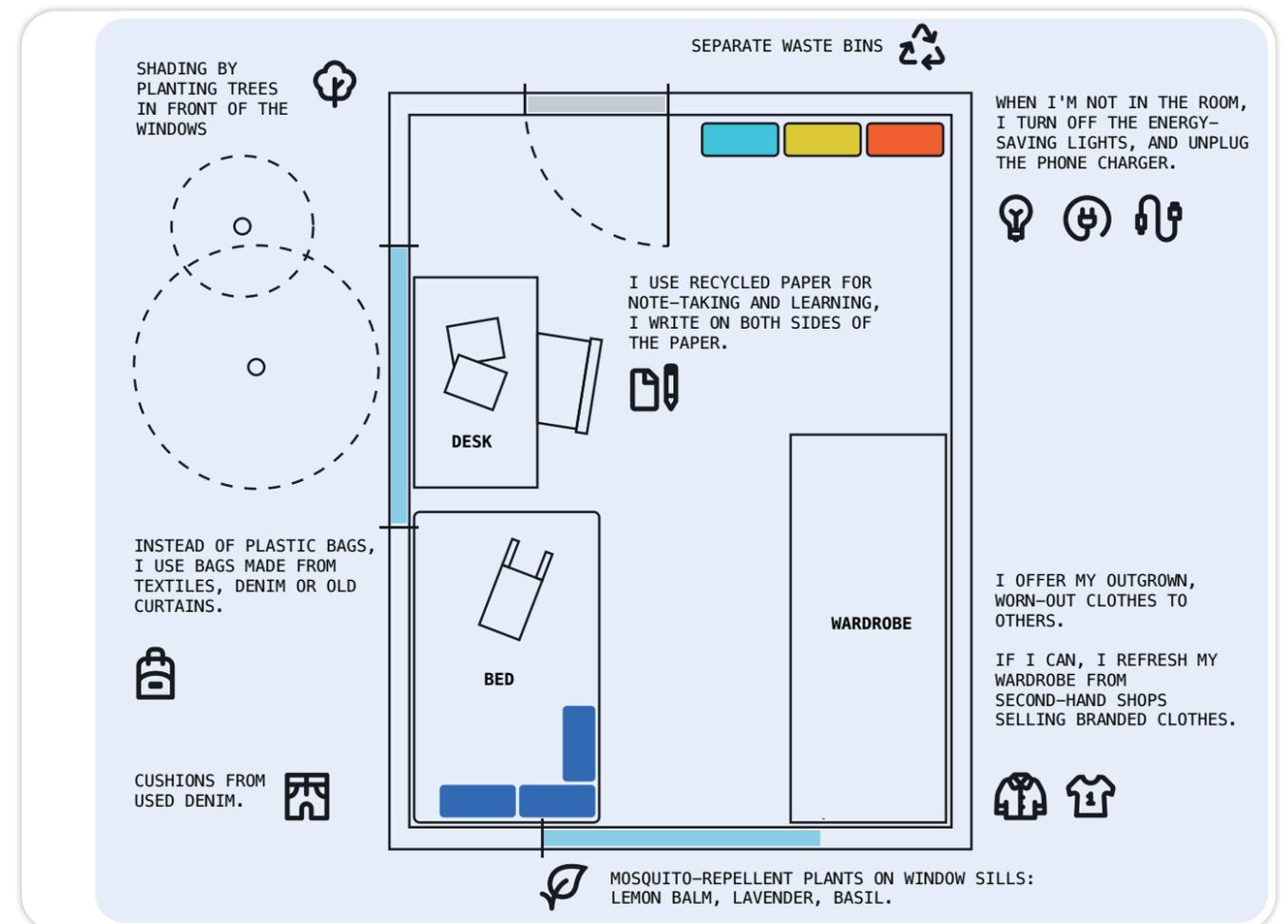
**Kata:** We studied the different aspects in small groups for two weeks, then uploaded the results to our shared folder. After the survey, each group came up with ideas on the way we imagine renewal and change. A team of group leaders came up with the final list, from which the “great graphic designers” of the class created the map.

– OK, so the eco-map is ready. What's next?

**Kristóf:** Our head teacher is very open-minded, and the implementation of low-cost ideas involving the students has already started, with the help of parents. And the proposals comprising large investments have been put on the agenda with the support of the teachers and parents. So they took us seriously.

## CREATE!

Make an eco-map of your room and make a list of what you can change yourself!



### THE DOCTOR MOLE AND THE ENGINEER TERMITE

Did you know that from ants to spiders, a great number of creatures solve “technical” and “engineering” problems in nature every day?

It is their ingenuity that inspired a creative team to design a community centre on the Balaton Uplands. While designing the building, they sought to ensure that the building materials used were not only recyclable, but also recycled, and that they used as little energy as possible (referred to as “grey energy” by architects) to produce them.



STOP!

Grey energy is usually the amount of energy consumed indirectly when buying or using a product or service that cannot be measured directly. This is the energy used to manufacture and transport products. Of course, it is not reflected in monthly energy bills either. In the case of a building, at least 20-50% of the total energy used to operate the building over its 50-year lifetime is grey energy.

To reduce the use of grey energy, wood and adobe are used to a significant extent in the construction of a building structure. Straw bales and cellulose fibre-based insulation are used as thermal insulation.

One major advantage of wood and adobe bricks over burnt bricks is that their production and processing is much less energy intensive, they emit much less CO<sub>2</sub>, and they are easily recyclable.

### BIOMIMICRY IN ARCHITECTURE

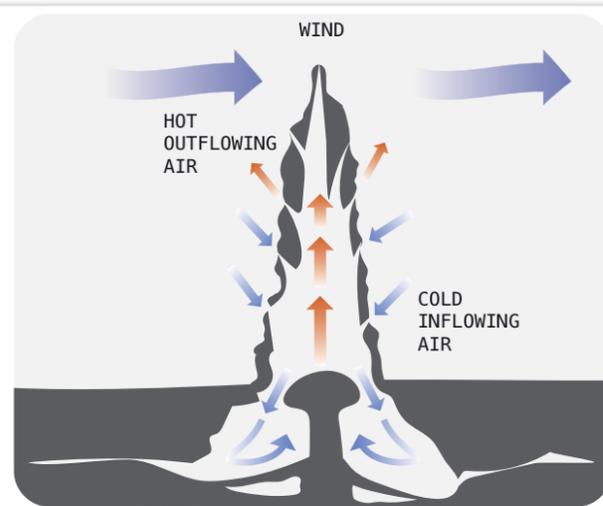


FIND OUT!

#### FIND OUT!

Look at the examples taken from nature in the world of architecture or medicine, engineering or even design. If you are interested in other fields, look for examples of biomimicry there.

Lesser mole-rats and European moles provided the basic ideas for the layout and functions of each building space. The living chambers of mole-rats are designed for well-defined functions: a sleeping place, a food store, a nest or for excreta. Since these animals spend a large part of their lives in a self-made structure, it is important for them to create suitable living conditions. To ensure this, their living spaces are properly insulated for example, and the temperature is controlled. Many professionals have realised that we can learn from nature.



The ventilation and air conditioning system of a termite mound

Let's take a specific building as an example.

To reduce energy consumption, architects for example have studied birds' nests with the help of biologists, testing the insulating and vapour permeability properties of insulation materials of different fibre thicknesses and substances. When they wanted to achieve climate control with as little mechanical engineering as possible, they relied on the ventilation solutions of the effective termite mounds that have been used for millions of years. The planned building will also be certified as a passive house in the future.

In addition, looking at future water use, the building will collect rainwater to be used for plant care, and grey wastewater from rooms with plumbing will be used to flush the toilets before being discharged as wastewater. In the future, they would also like to use a wastewater treatment process that would ensure that the generated wastewater is treated on site.

A+	<55	HIGHLY ENERGY-EFFICIENT
A	56-75	ENERGY-EFFICIENT
B	76-95	BETTER THAN REQUIRED
C	96-100	MEETS REQUIREMENT
D	101-120	BELOW REQUIREMENT
E	121-150	BETTER THAN AVERAGE
F	151-190	AVERAGE
G	191-250	BELOW AVERAGE
H	251-340	WEAK
I	341<	BAD



YOUR TURN

#### YOUR TURN!

- Which building energy category does the house you live in belong to?
- If it has an energy certificate, show it to your classmates.
- Find out what criteria are used to assess the energy rating of houses.

Moreover, the designers have sought to ensure that the building uses as little energy as possible. In addition to energy saving, an important design consideration was to install machinery that could operate effectively in terms of energy due to its high efficiency.

#### Comfortable, but how?

Yet what makes us feel comfortable in a building? Lesser mole-rats and termites instinctively know how to build a comfortable environment for themselves, but we need precise engineering, calculations and skilled professionals to create it.



As lay people, we cannot see the complex technical picture, so rating systems based on building energy consumption and sustainability have been developed to help us understand the ‘merits’ of buildings. Of course, we know what we need in a new building, which is why continuous dialogue between the architect and the client is so important during the design process.

We can play an active role in creating a pleasant and sustainable living environment for ourselves. Don't just walk past an abandoned rubbish heap, choose natural or better materials for building renovation, make an eco-map of your home and create an action plan. Learn to appreciate local communities and the experience of older people. Build on them, listen to their problems, and find solutions together.

## FROM SLUMS TO LUXURY HOUSING ESTATES

### Pros and cons of urbanisation



FIND OUT!

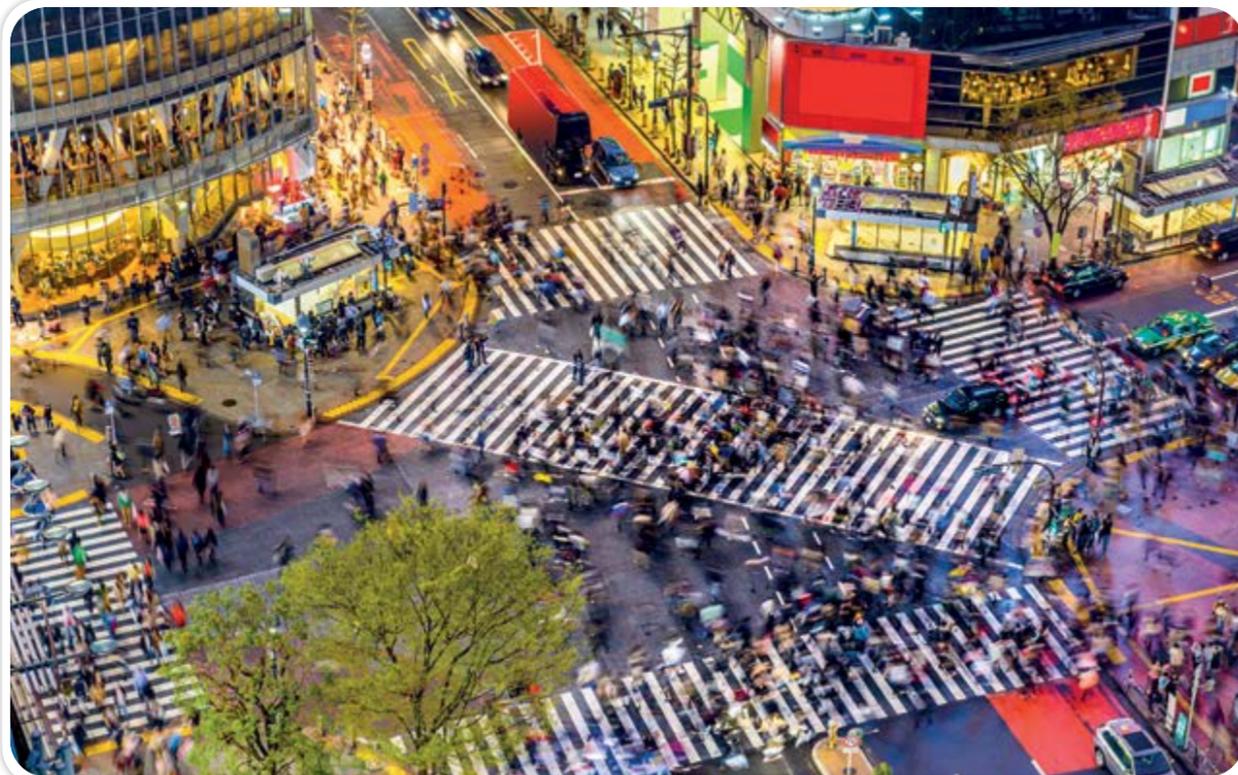
#### FIND OUT!

Before you read on, find out what the word urbanisation means.

Depopulating villages on the one side, megalopolises on the other. Slums of millions of people in one place, luxury housing estates protected by private security services in the other. Are these really the extremes that characterise our towns and cities, or is the picture too bleak?

Let's look at the facts!

In Hungary, the capital has 1.73 million inhabitants, while worldwide, 1.7 billion people live in towns and cities with a larger population. In 1800, only one in ten people lived in a city; by the end of the 2000s, one in two people were city dwellers. The proportions vary from continent to continent, but rural to urban migration is a ubiquitous phenomenon. If this trend continues, two-thirds of the world's population will live in cities by 2050. Why are more and more people choosing a bustling urban lifestyle?



#### In the city

- more job opportunities,
- higher wages,
- a wide range of services,
- higher living standards,
- better infrastructure (sewerage, electricity, heating, roads),
- more comfortable living.



STOP!

Did you know that Reykjavik, the capital of Iceland, is a leading eco-city because 95% of the energy used for heating comes from geothermal sources (thanks to volcanoes) and because it prioritises the protection of green spaces and the development of public transport?

We can see from the figures that both the rate of *urban growth* (increase in the number of cities and the number of people living in them) and the rate of *urbanisation* (development of the supply level, organisation and lifestyle of the inhabitants there) are increasing globally. Urbanisation exploded during the industrial revolution, initially in Western Europe and North America.



Kibera, Africa's largest slum. Nairobi, Kenya

The mechanisation of the agricultural sector drew extra workers to factories built in the cities.

Alongside technological developments, the increasing protection of human rights improved quality of life. In the majority of countries liberated from colonial rule, similar changes began only a few decades ago and in many cases coincided with a population explosion, leading to a so-called urbanisation crisis. In these places, the underdeveloped economies are unable to provide a living for the masses concentrated in the cities, and slums are being formed.

But it is not only poverty, inadequate housing or crime that can make cities unliveable. The price of urban "comfort" is the lack of green surfaces, polluted air, the stress of a hectic lifestyle, or the low quality of public services.

#### What are the solutions to these problems?



YOUR TURN

#### YOUR TURN!

Where would you like to live? An eco-city or a smart city? In small groups, gather the pros and cons for the two types of municipality, then organise a debate day where you can listen to each other's opinions.

- One possible answer is a sustainable city, also known as an eco-city, which functions by relying on renewable energy, increased green surfaces, recycling, composting, emission reduction, smart public transport and other innovative yet sustainable technologies.
- Another urban model that puts digital technology at the service of sustainability is the smart city. Do you think there can be a solution where eco-city and smart-city solutions are not mutually exclusive but support each other?



FIND OUT!

#### FIND OUT!

Do you know the difference between urban growth and urbanisation? Before you read any further, find out!

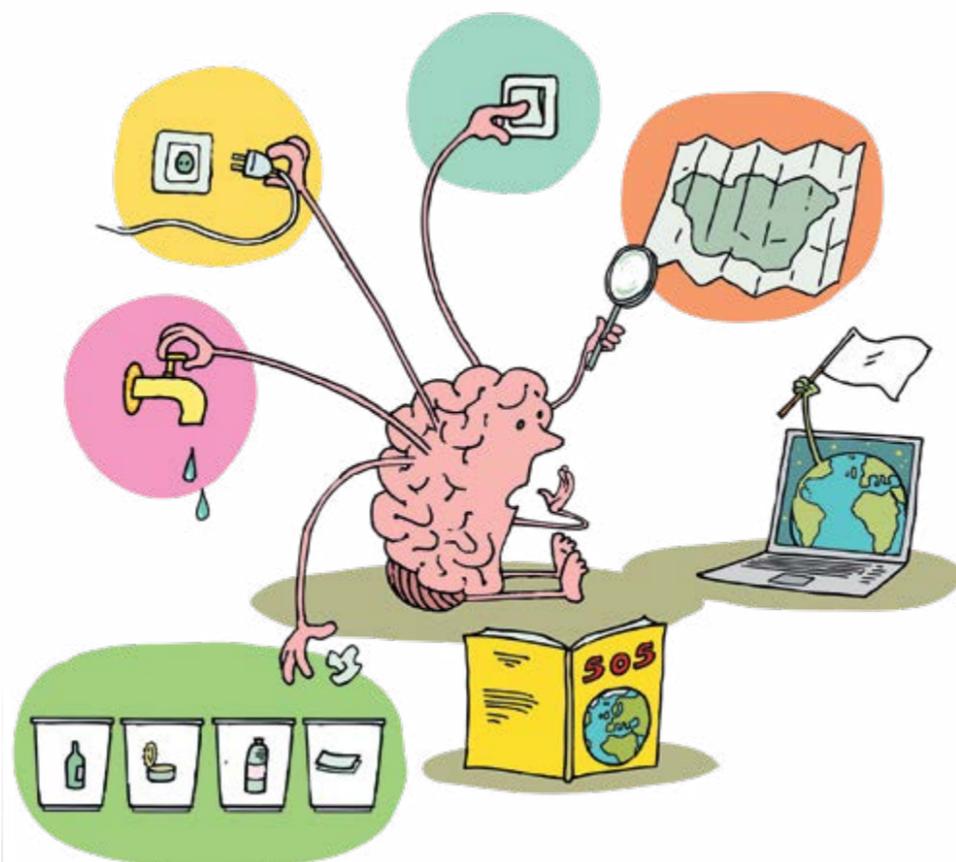
## RURAL DEVELOPMENT

As well as making cities liveable, sustainable rural development is essential to prevent mass migration. The most important areas for rural development are education, business and infrastructure development, so that people can work locally or travel easily between their schools, workplaces and homes. There is no single right answer to all urbanisation problems that works equally well anywhere in the world. But we can learn from each other and incorporate the experiences of local initiatives into our own responses, to answer the question of how to live more sustainably in our cities.

### What you can do

Fortunately, you can contribute to the sustainability of places as an individual, and all you need to do is to choose solutions that are already known and proven:

- separate waste collection,
- moderate water consumption,
- public transport or
- using a bicycle,
- volunteering for the local community and environment.



Of course, it's always a big help if you have a new idea. In cities, we often look for or miss the living conditions that are available in a small rural village or hamlet without making any changes, such as the peace and quiet, being close to nature, a vegetable garden, less traffic.

Of course, technological progress is faster in cities than in rural areas, but nowadays the internet is available everywhere, so you can work remotely online even from a small village.

## WHEN PASSIVE IS GOOD

Solutions for reducing energy demand and creating sensible, sustainable living spaces already exist. These are passive houses, or their siblings, the nearly zero-energy buildings.



### What is a passive house?

A passive house is a certification system for energy-efficient buildings.

A house is passive because it can provide a comfortable temperature without active heating. Heat loss is kept very low, while internal heat emitted by people and various appliances and equipment is recovered.

The house is well insulated (structure, building mechanics, doors and windows, etc.), solar or wind energy is used where possible to provide electricity, and a ventilation/heat-exchange system is installed in which the heat from the exhaust air is transferred to the fresh air coming in. When heating is needed, a heat pump using geothermal heat is often used. The first passive house was built in 1990.



Passive houses mainly use renewable energy. With the right orientation, solar energy can be harnessed even in the winter months. Depending on the regulations in each country, the following renewable energy systems can be found in passive houses:

- solar panels,
- solar collector,
- small domestic wind turbine,
- heat pump,
- biomass system.

The summer heat can be kept out with appropriate shading, or the heat inside the house can be made bearable with active cooling from renewable energy sources. The most common heating solutions are underfloor and wall heating.



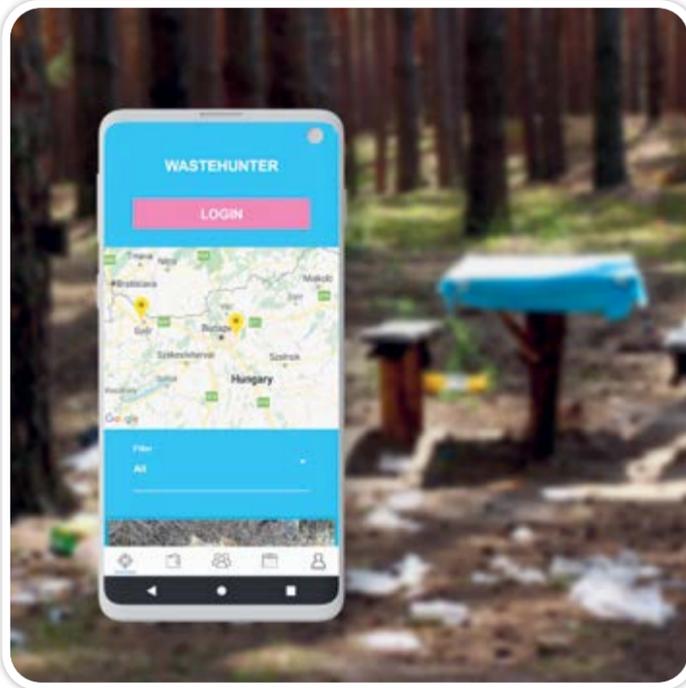
### FIND OUT!

- What is biomass?
- Share the information with your classmates!

Carbon neutral houses or NZEBs (nearly zero-energy buildings), the "siblings" of passive houses, are even more efficient.

- Find out the difference between a passive house and a carbon neutral house.
- Make a presentation and show your research to your classmates.

## WASTE POLICE How to fight against illegal dumping

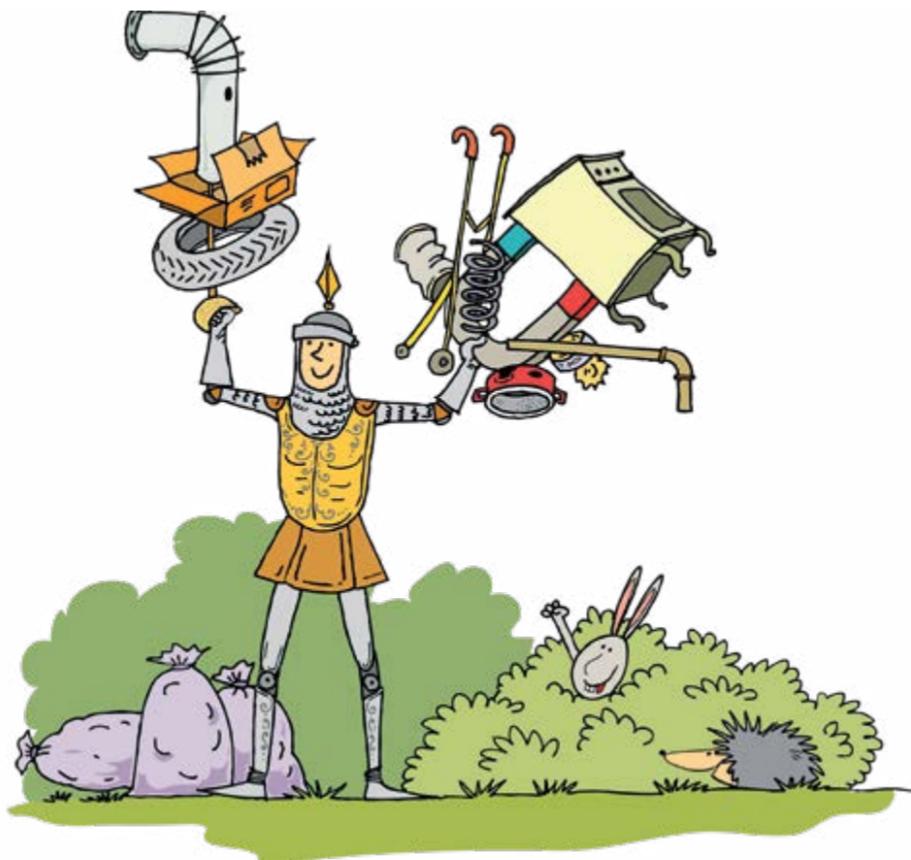


Unfortunately, in forests and on river banks we often come across illegal waste, or waste that has come down the river and has been dumped on the floodplain during flooding.

There are now a number of apps that allow you to record GPS coordinates and report these contaminated sites to the authorities. You can also take photos of them and indicate their size – i.e. whether a bag or wheelbarrow is enough, or a truck is needed to remove them. It also matters what type of waste you have found: plastic, glass, car wreck, rubble, etc.

These apps are a great help in organising waste collection campaigns. The Hungarian apps also show legal landfills.

If you decide to get involved in litter-picking yourself, wear rubber gloves, carry hand sanitiser and make sure you don't touch hazardous waste or glass (which can tear the bag and cause accidents). Ask for the help of an adult!



## THE LARGEST SOLAR FARMS IN THE WORLD

The fastest growing area of renewable energy is the solar industry. The ranking of solar farms is only a snapshot, as the biggest companies are outbidding each other to build these monumental power plants with ever-larger capacities in more and more areas. The most populous and hottest countries, notably India, Mexico and China, have solar parks the size of cities.



### The 10 largest solar farms on earth (in 2020)

	Name of solar farm	Capacity	Country
1	Tengger Desert Solar Park	1547 MW	China
2	Sweihan Photovoltaic Independent Power Project	1177 MW	United Arab Emirates
3	Datong Solar Power Top Runner Base	1070 MW	China
4	Yanchi Ningxia Solar Park	1000 MW	China
5	Kurnool Ultra Mega Solar Park	1000 MW	India
6	Longyangxia Dam Solar Park	850 MW	China
7	Enel Villanueva PV Plant	828 MW	Mexico
8	Kamuthi Solar Power Station	647 MW	India
9	Solar Star Projects	579 MW	United States
10	Topaz Solar Farm/Desert Sunlight Solar Farm	550 MW	United States



### YOUR TURN!

- Find out the location of solar farms in Hungary. Which one has the highest capacity?
- Show on a graph how the number and total capacity of solar farms in Hungary has increased over time.
- Compare with other energy sources.
- Find out how many households can be supplied by solar parks.

## SMART CITY, SMART COMMUNITY

There is no generally accepted definition of a smart city. Many people use the term 'smart' to refer to the application of technology, the collection and analysis of data from transport and consumption.

But perhaps we are closer to the truth if we consider a smart city, or rather smart community – because a village can be smart as well – as a complex development direction that can fit in with sustainable development strategies, yet also raises questions such as the protection of personal data or the contribution of new smart devices to the growth of consumption. The focus of development should be on the well-being of the people living there, which is achieved with the aid of "smart technology". It is a comprehensive, complex system, where no part can function without the other.

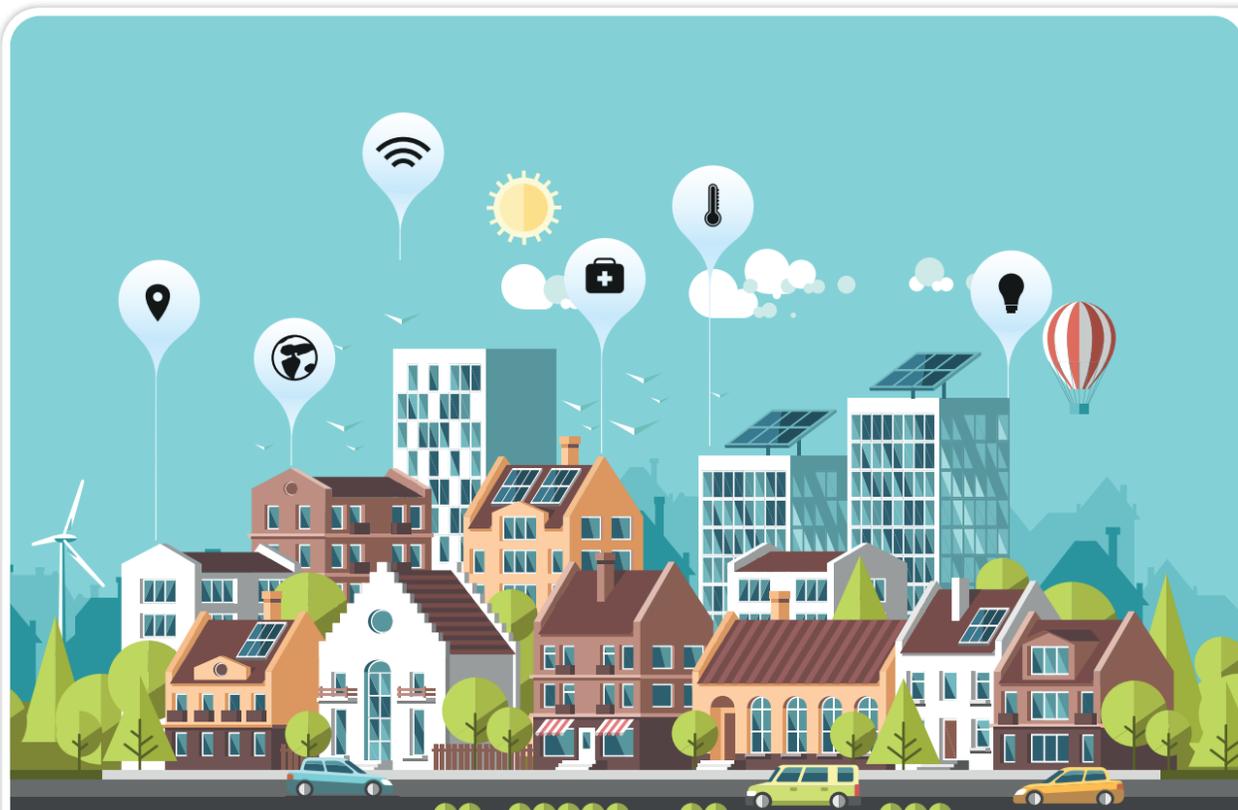
### FIND OUT!

- Do you know the difference between prosperity and well-being? If not, find out and share the information with your classmates.

Urban planners around the world have encountered similar problems, and independently of each other have developed similar solutions.

The key areas are:

1. sustainable development of the natural and built environment,
2. development of digital infrastructure,
3. improving the quality of municipal services,
4. involving the population,
5. creating economic efficiency.



## WATER IS OUR MOST PRECIOUS RESOURCE

### How can we reduce water consumption in our homes?



### FIND OUT!

- Find out how much water is needed to produce
  - a cup of coffee,
  - 1 kg of beef,
  - 1 kg of carrots,
  - 1 plastic bottle,
  - 1 mobile phone,
  - 1 microchip,
  - 1 pair of jeans
 until these products get to you! Share the information you have collected with your classmates.

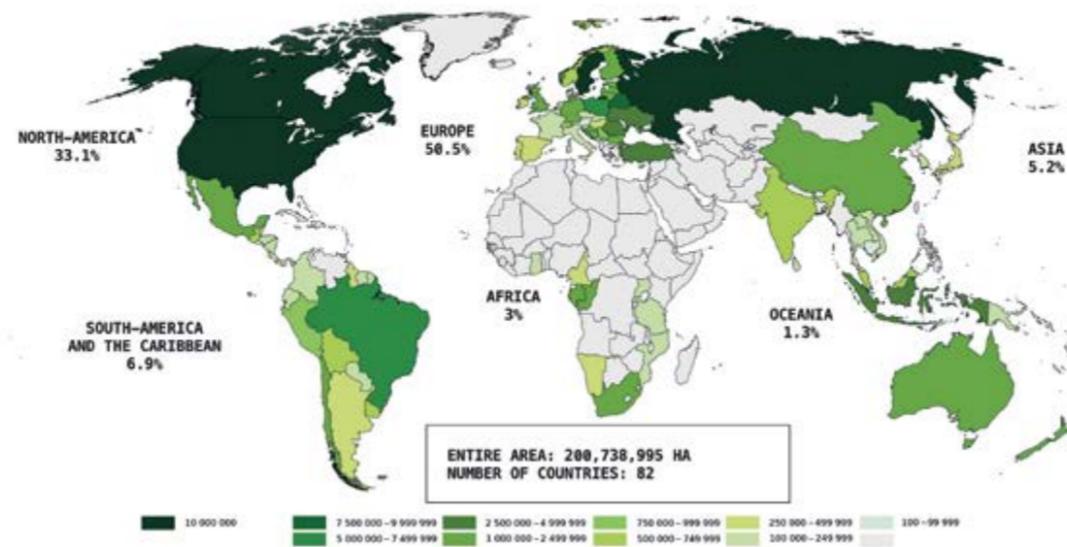
- Calculate your water footprint, which shows how much water you consume per day.
- Compare your water footprint with that of your classmates.

## BUILDING MATERIALS IN NATURE: WHAT A CARPENTER SEES IN THE FOREST...

### Building timber

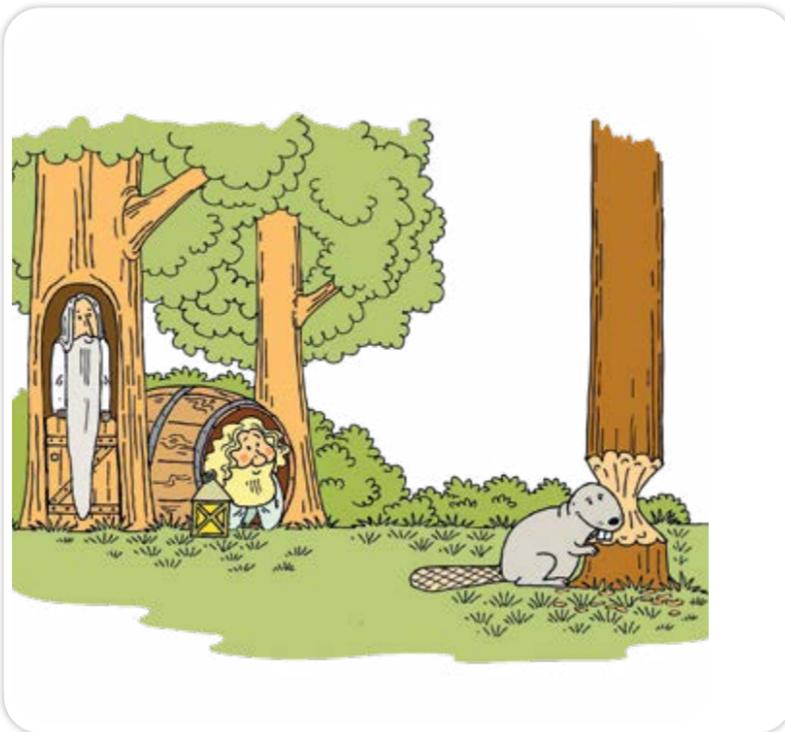
So many good building trees, sighs the carpenter wandering among 80-100 year-old trees. Indeed, the forest is significant not only for its ecological value, but also for another value: the timber it contains. Responsible forest management is needed to preserve biodiversity, or the diversity of species, but also to provide the timber needed for construction and furniture. This is why the FSC certification was created in 1993, which is awarded based on criteria set by the Forest Stewardship Council (FSC).

RATIO OF FSC-CERTIFIED FOREST AREA BY CONTINENT



### YOUR TURN!

- What is the concept of responsible forest management?
- What activities does it involve?
- Compare traditional and sustainable forest management.
- Make a presentation and share the information with your classmates.



### Limestone, marl, clay

Limestone and marl, a mixture of limestone and clay, are the raw materials for cement, which is essential for the production of concrete. It is a rock formed over millions of years from the remains of calcareous organisms deposited in the depths of the sea. Bunched up, broken up into vertical blocks and protruding upwards it forms long mountain ranges, but it is also found as solitary clumps. At great depth, pressure and heat transform it into marble, a much harder and more resistant rock.



Malbork, the world's largest brick castle, and the pride of Hungary, Gyula Castle



The traditional material of bricks and tiles is clay, which is used after moulding and firing. It is very resistant and can even be used to build a castle. The largest brick castle in the world is in Malbork, Poland, built by the Teutonic Order in the 14<sup>th</sup> century.

The clay is mixed with plant fibres to make adobe bricks, which are then dried in the sun and used in buildings. Adobe is also used as additional masonry for straw houses. Gypsum, traditionally secreted in shallow seas but also produced under industrial conditions, is another versatile material used in the construction industry (plaster blocks, plasterboard).



FIND OUT!

### FIND OUT!

- Find out how materials from the demolition of buildings can be recycled. Is it still necessary to quarry these rocks?
- Share the results of your research with your classmates.

### Basalt

Basalt is used as the base of buildings (and in the foundations of railway tracks) and is a volcanic igneous rock that has solidified in polygonal columns. You can observe this very clearly on Hegyestű Hill in the Balaton Uplands, where you can walk right into the hill, into an abandoned basalt quarry that is now protected. Basalt is melted and blown into a tube furnace to produce rock wool, which can be used as excellent and durable thermal insulation.



## BUILDING MATERIALS FROM THE FUTURE

Passive houses, like conventional buildings, are generally built from customary building materials, but there are some ideas that transcend this concept.

### Plastic masonry bricks

A Californian company makes masonry bricks from the plastics that are choking the world. The waste, which is made up of several types of plastic, is first sorted and disinfected, then ground down and pressed at high temperatures to make regular-sized bricks. The manufacturers claim that the bricks, which are still in the experimental stage and are made without any adhesive, provide excellent sound and heat insulation and produce 95 percent less in greenhouse gas emissions than conventional bricks.



The problem with the invention, however, lies in its raw material. Although bricks made from plastic waste can be used to replace the cement-based building material with its high greenhouse gas emissions, the original plastic product itself produces a similar level of pollution; besides, although the plastic is temporarily removed from the raw material cycle, when the buildings are demolished, the large quantities of pollutants will be released back into the environment if their disposal is not addressed. The Material Passport, which contains a description of all the components of a product, is a way of avoiding this problem by providing important information for recovery, reuse and recycling.

### Vacuum insulated panel

A vacuum insulated panel is a thin thermal insulation material. Inside it contains microporous silica panels, enclosed in an airtight space in a gas- and watertight aluminium foil. A vacuum is the best insulator of heat and sound, as there is no material in the vacuum to transmit either heat or sound. Vacuum panels are expensive for the time being, and another disadvantage is that the walls they cover must not be drilled. However, the insulation is durable and is predicted to retain more than eighty percent of its properties for at least thirty years.



Vacuum panels are already being tried as load-bearing walls in combination with various high-strength materials, such as concrete, to achieve even greater space savings: at 11 centimetres thick, such a wall has the same thermal insulation capacity as a 50 centimetre wide wall built from conventional materials and insulated. These elements are mostly used in places where building plots are expensive or small, so the value of the square metres gained offsets the cost increase due to higher material prices.

### Bamboo, an old/new building material

Several researchers are experimenting with new industrial uses of bamboo. One of the best varieties is moso bamboo, which can be moulded into bricks using certain technologies. The main advantage of using bamboo in Asia and Central and South America is its abundance as a natural resource and its easy availability. As a building material, bamboo is a new economic opportunity for less developed countries, promoting sustainable forms of construction with a lower carbon footprint than reinforced concrete. As a building element on its own, bamboo can only be used in permanently warm climates; in colder climates, such as Hungary, it requires additional insulation.



### YOUR TURN!

1. Why is bamboo not used as a building material in countries with a continental climate?
2. What is a composite?
3. Share the information with your classmates.

## WHAT IS YOUR COBWEB LIKE?

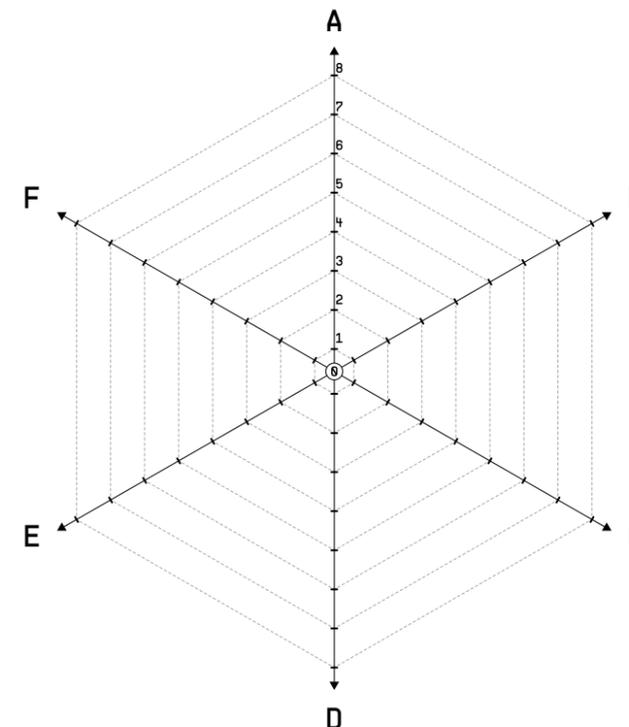
Rate how true the following statements are for you. Do the exercise in your notebook.

1. Not me at all, I don't consider it important.
2. Not typical of me.
3. It has happened once or twice.
4. I try to, but more often than not I don't.
5. I try to, and more often than not I do.
6. I sometimes forget, but I tend to do it.
7. It's very typical of me.
8. That's exactly what I do, and I try to convince others too.

### STATEMENT

- |  |
|--|
| A) I make sure I don't run water from the tap unnecessarily.                                       |
| B) I always separate my rubbish.   |
| C) I regularly select things I don't need anymore and give them to someone who can still use them. |
| D) I make sure lights are on and the water runs only where and when needed.                        |
| E) When I buy something, I consider whether I really need it.                                      |
| F) I give preference to recycled and circular economy products.                                    |

Once you have assigned a value to each row, draw the following spider web pattern in your notebook and mark your values on the graph. If, for example, you have written a number 3 for statement A and 7 for B, mark these on the axes and then link the dots. You'll get a star-shaped graph which you can colour in.



- When you're done, take a look! What shape is it? How much area have you managed to colour?
- Compare your graph with those made by your classmates. Is there anyone else who got a similar shape?
- Are there others who coloured in an area of a roughly similar size, but the star shape is completely different? What do you think is the reason for the difference?

You can average all the answers of the class and make a graph of the current status of the class. You can even look at it again next term and see how it has changed.



In fact, you can make commitments such as setting a target to improve the graph on average, or focusing on one statement and trying to improve that as a class.

To: Green Planet Editorial Office

From: Piroska Ladányi

Subject: **Help!**

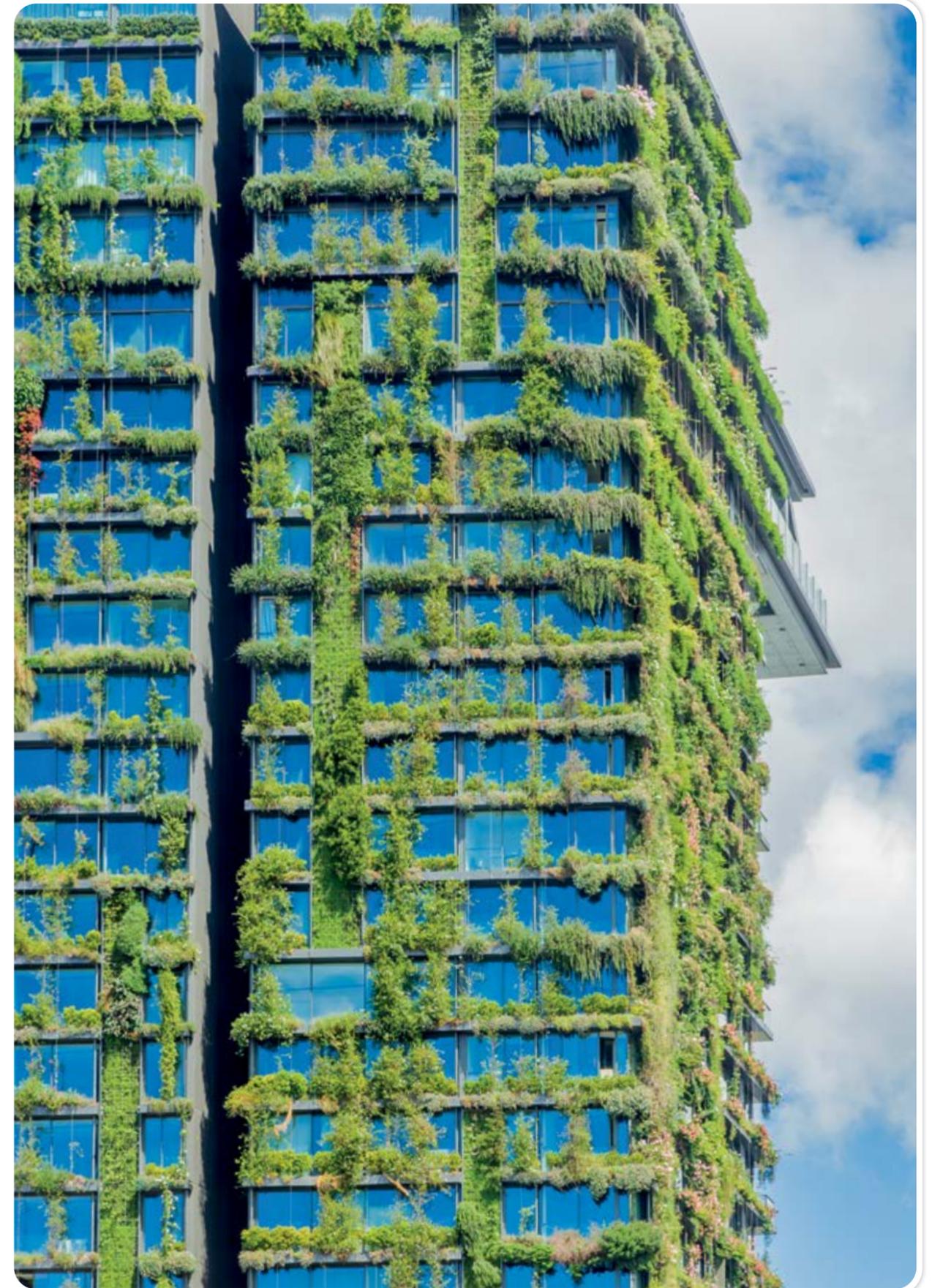
Dear Editorial Team,

Please help me! What should I do? I think my neighbour uses waste to heat his house. There is a pungent smell and black smoke when he does so. It would mean a lot if he could see in print what the problem is with this, because he doesn't believe me. He laughs at me, fobs me off and carries on as if nothing had happened.

He claims there is nothing forbidding him doing what he wants in his own garden.

I look forward to your reply.

Sincerely,  
Piroska Ladányi





# In top form

## Eco-conscious healthy lifestyle



### CONTENTS

- SO NOT BEING SICK MEANS YOU'RE HEALTHY?
- THE SKY'S THE LIMIT
- FARMING WITH FAMILY

### TO OUR HEALTH!

"Health is the greatest wealth", goes the saying. But who is healthy, and why?



FIND OUT!

#### FIND OUT!

What do you think makes someone healthy?

- Is someone who is biologically fine, physically healthy but suffering from severe depression healthy?
- Or is someone healthy who is happy, balanced and in perfect harmony with themselves, but always has to take medication?
- Or someone who is afraid of spiders?
- Someone who spends a lot of time playing computer games?
- Or someone whose fear or addiction prevents them from doing their daily tasks?

It's not so easy to define what health is and who is healthy. Before you read on, think about these aspects or discuss them with others.

Is everyone who isn't sick healthy?

In very simple terms, a healthy individual is someone who can respond to the biological, psychological, social and environmental challenges of life without compromising their ability to function, and they can remain in harmony with themselves. This doesn't mean they can't be moody or despondent, but they can still go about their daily tasks without losing self-confidence.

Another accepted definition of health is given by the World Health Organisation (WHO), which states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

Health is therefore a very complex concept, and it cannot be oversimplified by saying that someone who is not ill is healthy. It is also important to consider that health does not mean the same thing to everyone.

And another twist!

#### Times are changing!

Understanding the concept of health is further complicated by the age in which it is being studied. What we think of as a disease today might have been dismissed as nonsense a few decades ago. Such examples include binge drinking, compulsive gambling or depression. The point is that health is a state where the individual always tries to do the best they can while striving for happiness and being kind to themselves, but not at the expense of others.

Which means what exactly?

- **Biological** health is the everyday concept of health. It means the proper functioning of our body. In other words, not being sick, proper biological functioning, a state of adequate physical fitness.
- **Spiritual** health involves our personal outlook, our behaviour and peace and harmony with ourselves.
- **Mental** health is characterised by the ability to think clearly and consistently.
- **Emotional** health implies the ability to recognise feelings and to express them appropriately.
- **Social** health is the need and ability to form relationships with others.

It is clear from the above that it is not so easy to be healthy or to judge whether we are healthy.



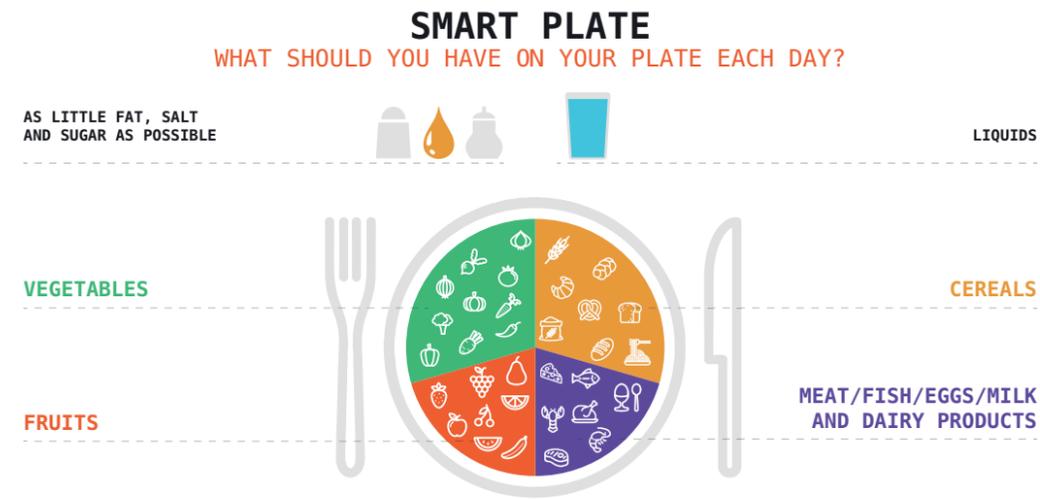
YOUR TURN

#### YOUR TURN!

You can see that health is a complex issue as it has many components, or dimensions in other words. In this respect we can talk about biological, spiritual, mental, emotional and social dimensions of health.

- Discuss with your classmates when it can be said that someone wants to be happy at the expense of others.

Nutritional science is also constantly evolving. This is how the food pyramid and later the smart plate concept developed.



But what helps us stay healthy?

#### Inherited biological traits

Some factors are a given. And hereditary biological traits belong to this category. For example, whether someone is prone to high blood pressure, diabetes or vital organ problems. Fortunately, within certain limits, these can be influenced by the individual's lifestyle and daily routine. We learn these largely from our family, friends and the people we care about. In other words, our health is greatly influenced by the behaviour of the people around us.

#### Access to health care

Even if I inherit strong bones and eat calcium-rich foods, if I accidentally fall, break my fingers and don't get proper medical attention in time, I may suffer permanent damage. My condition makes me miserable and my constant malaise gives me an upset stomach. The doctor prescribes me some medication to prevent the problem from becoming more serious. I can buy the medication in a pharmacy. These examples show that access to health care is an essential element of our social environment, and a prerequisite for preserving and restoring our health.

#### Natural environment

And the big system that encompasses everything is the natural environment, with its soil, water, air and living things, which provides the basic conditions for life. Below we will look at the interplay between health – including food – and the environment, through various examples. We will also give ideas on what we can do to help our environment support our health, and what we can do to be healthy while looking after the health of our environment.



#### FARMING WITH FAMILY

A week ago, while walking through the local farmers' market, I noticed three young people. They were selling their own produce: tomatoes, strawberries and early vegetables at one of the stalls reserved for primary producers. They offered me strawberries to taste how sweet they were. It turned out that Cinti, Norbi and Ági are in the 10<sup>th</sup> grade at the local Nagy Alfréd Agriculture and Food Industry Technical School, and are working on a project entitled "We must become sustainable".

It turned out that they took on this project at the beginning of grade 9, and it will be part of their portfolio for the end of their year 5 practical vocational exam. Norbi's grandparents had a large vegetable garden where – with the help of Cinti's dad – they put up a greenhouse last year and started growing early vegetables and strawberries. What they were selling was the result of this work.

– Do you feel it is worth getting into this kind of project, when produce in shops is often cheaper?

**Cinti:** Well, these strawberries can't be compared to the ones sold in the grocery shops. The customers are not very wealthy, and it matters to them what they pay for food. We started from the idea that cheap store-bought strawberries were grown somewhere far away, under conditions we don't really know anything about, and they travel a long way to the consumer. What we are seeing is that health-conscious customers have finally appeared in the market who are even willing to pay a higher price, or perhaps buy less for the same amount, because they know where the product they are buying comes from, and the conditions under which it was grown. They recognise that less is more with good quality produce because it is incomparably tastier. These are the customers we build on.

**Norbi:** Many producers and customers meet here at the market. The buyers can compare prices, maybe even taste the produce, and because of the relatively short distances they can even come to our garden to see how we grow our vegetables, give us their opinions and ask questions. They can see that we don't use chemicals, that the vegetables or fruit don't contain ingredients that are harmful to health, and that we take extra care not to harm the environment.

– What are your plans for the future?

**Ági:** Cinti's dad used to work on an organic farm. There the customers would come to the farm for vegetables and the owners would deliver them too. Three times a week, fresh produce ordered online was delivered to the customer's homes in paper boxes. Now we are trying to follow this trend.

– Is organic healthier?

**Ági:** This is a question we have been asked by a lot of people. And the answer is, not necessarily. For example, if the farmer waits for the so-called "withdrawal period" for an apple protected with chemicals, then there is certainly no need to worry about residual chemical on the fruit, while the vitamin content of the sprayed fruit will not be inferior to that of an organic one either.

– So why do I have to choose organic?

**Ági:** You don't! It's only recommended because no herbicides or insecticides were used in the production of this produce, no living organisms were killed, and there was no unnecessary pollution of the soil or water.

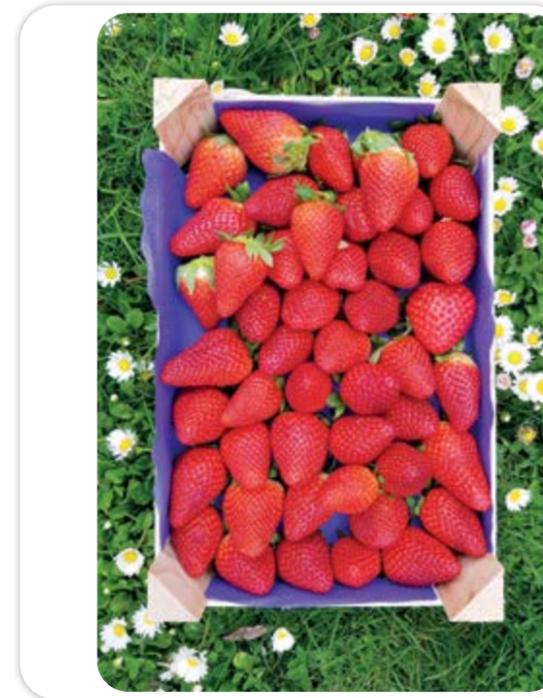
– How do you market yourselves?

**Cinti:** So far we've only been distributing leaflets, and Norbi created a website. We read that the National Chamber of Agriculture website has a database that filters local farmers' markets by area, producer and produce. Dad registered, we created our own virtual stall and offer our own produce on it. This way we can sell our goods from home, 24 hours a day.

– I will definitely check it out. I'm curious. And how does this relate to your portfolios?

**Norbi:** Because we have been documenting everything over the years. We created a business plan. Part of it is the marketing plan that I mentioned before. We also put together a production plan, which we revise every year. It shows the varieties of crops grown in a given year, the methods and materials we use, and what the results have been. We also have a financial plan: I prepare a budget based on incomes and expenses at least every six months. That's my job. We document everything with pictures and videos too. Can I take a picture of you shopping? It would be included in our portfolio.

– Of course! I'll be proud of it. Good luck and perseverance to you all!



## THE SKY'S THE LIMIT

Sometimes the only barrier is your imagination.

Home-grown farming free of chemicals is becoming increasingly important for more and more families who want to grow their vegetables, fruit and herbs in conditions that are not harmful to their health or the natural environment. This can be done in the garden, on the terrace or on the balcony. You can even save money or grow food that you couldn't afford to buy. All it takes is patience, perseverance and learning.

*What do you need?*

The basis for growing crops in a garden is good soil, which is most easily improved by composting our own green waste. To keep pests under control, plant marigolds on the borders, but you can also protect against them by rotating or intercropping plants.

*What does this mean?*

The table shows which plants thrive next to each other (e.g. onions and carrots, or corn on which beans can grow and pumpkins that thrive underneath corn and cover the soil, thus helping preserve moisture) and which ones inhibit each other's growth (e.g. onions and peas). It is worth studying this list and planning your garden beds accordingly.

Include plants that attract pollinating insects! Even if you have a small garden, you don't have to give up on your plans – several plants (e.g. beans) will produce a particularly bountiful harvest when grown on a sunny fence around the perimeter. You should also try tricks used by experienced organic gardeners, such as watering at dawn to prevent fungal growth, using thick straw or bark mulch to retain soil moisture, and storing rainwater in large barrels with sealable lids or even in underground cisterns.

### PLANT PROTECTION

BASIL	DILL	MARIGOLD	MINT
PEPPER, TOMATO  	CABBAGE, ONION, SALAD, CUCUMBER    	POTATO, TOMATO  	CABBAGE, TOMATO  
SAGE	CHIVES	LAVENDER	GARLIC
TOMATO, STRAWBERRY, CARROT, CABBAGE    	TOMATO, ROSE, CARROT   	BEAN 	TOMATO, STRAWBERRY, ROSE, BEETROOT, CARROT, CUCUMBER       

## MAKE COMPOST!

One of the easiest and most environmentally friendly ways to manage food waste is to compost kitchen and garden green waste. This is no longer just a "privilege" enjoyed by people living in a house with a garden; you can do it in a bucket in the kitchen of your 5<sup>th</sup> floor apartment. Of course, the latter requires real commitment as well as preparation, consistent discipline, not to mention the consent of family members.



### YOUR TURN!

- Find out how to compost in your home or on your balcony. Make a video or poster about it. Share your knowledge with others.
- Design a composting project for your school.
- Find out how much organic waste is generated in your classroom.
- Ask your classmates and parents to participate in the project. Make suggestions to the school administration for environmentally friendly waste management.

In Hungary, approximately 3.6 million tonnes of municipal waste is generated every year, most of which goes to landfill, even though 1/3 of it could be composted. This would mean approximately 900,000 tonnes of saved waste, as composting (after 9-12 months) would result in nutrient-rich humus that can be used to improve the soil of flowers and vegetables grown in the garden or houseplants grown in pots – in other words, organic material would be recycled and used as a useful raw material instead of going to waste.

### What can and what can't be composted?

COMPOSTABLE		LIMITED COMPOSTABILITY	NOT COMPOSTABLE
FROM THE KITCHEN AND THE HOUSEHOLD	FROM THE GARDEN	FROM THE KITCHEN AND GARDEN	
waste from cleaning vegetables, potato skin and fruit peel, cabbage and lettuce leaves, coffee and tea grounds, wilted flowers	grass clippings, garden weeds (before flowering)	citrus fruits, peels of treated tropical fruit 	residues of paint, varnish, oil and grease
dried leaves of houseplants, potting soil	leaves (including walnut leaves!), straw, crushed branches, twigs, dead annual flowers, seedlings, fallen fruit, manure from stables and poultry coops	wood ash 	synthetic or non-degradable materials (plastics, glass, tiles, metals)
droppings of herbivorous pets along with wood shaving litter, feathers, hair	wood shavings, sawdust	eggshells 	leftovers from cooked food, meat and bones, although degradable, should not be placed in the composter because they attract stray animals and rodents and thus contribute to a risk of infection
paper (tissue paper, cut-up egg boxes), textiles made from wool, cotton and linen (cut up)		needles of coniferous trees, pine cones, pits of stone fruits  	infected, sick plants, plant parts treated with pesticides
		newspapers  	bedding of carnivorous animals

**But how?**

It is usually easy to guess which categories of waste are compostable and which are non-compostable; in general, a good approach is that if a kind of waste is from organic, naturally occurring material, it will decompose.

- The peels of citrus fruits and tropical fruits shipped from far away are often treated with preservatives that prevent or inhibit degradation. It all depends on how you look at composting:
  - as a waste management method,
  - or as a way of producing perfectly clean compost that is of an ideal composition and quality. In this case you only throw organic lemon onto your compost heap, and you give preference to locally grown fruit.
- Wood ash is very alkaline, so if you add too much to your compost it will shift the pH a lot, which some plants won't like. So we do not recommend more than 2-3 kg of ash per cubic metre.
- Eggshells should be crushed before adding them to the compost, as their lime-rich composition requires higher temperatures and more time to decompose. This is why it is still possible to notice eggshells when turning over the compost, so be patient!
- The situation is similar with pine needles and cones. Since pine forests never get buried under the pile of cones, we can be sure that the cones added to our compost will also decompose over time.
- It's best to sift out the pits of stone fruits from the finished compost and give them another year to decompose if you don't want your garden to be overrun by sour cherry saplings, for example.
- Glossy and coloured newsprint, as well as paper products printed with lead-based inks are not compostable, but plain black and white natural papers are.

As you can see, nature does not produce waste, and it breaks down its own "products" over time.

**Misconceptions and rural legends:**

- Walnut leaves are an eternal dilemma. Fresh, green walnut leaves contain juglone, which does have an anti-sprouting effect, but the substance decomposes within a few days. So it is safe to put walnut leaves in your compost, since by the time you add the humus to the soil of your plants they will already have transformed into valuable nutrients.
- Whoever thinks that burning dry leaves is not harmful is very wrong. This practice is not only prohibited by law, it is also very harmful from an environmental and health point of view; yet many people burn fallen leaves in the autumn. Compost them instead, and provide a double benefit for your health.
- It will stink. Why, does it stink in the woods? If you maintain your compost properly, it won't stink at all. It's important to follow a few rules of thumb, such as not placing the composter in the sun, covering rotten fruit added to the compost with a few leaves, and turning the whole pile over if you see fruit flies circling over the compost. The finished, sifted compost has a pleasant woodland smell, and if you mix it with potting soil in 1:1 ratio and use it for planting, your plants are guaranteed to love it.



**WATER IS WATER. OR IS IT?**

While your grandparents soothe their aching joints in the thermal waters of a spa, you are sent to the pharmacy to buy medicinal water. Who can understand the difference? Shouldn't they simply drink mineral water? After all, water is water. Or is it?

Hungary is rich in thermal waters, ranking 5<sup>th</sup> in the world, preceded only by Japan, Iceland, Italy and France. In the capital city alone, 118 thermal springs provide a total of 70 million litres of healing water a day for spas, swimming pools and drinking fountains.

**Characteristics of thermal waters:**

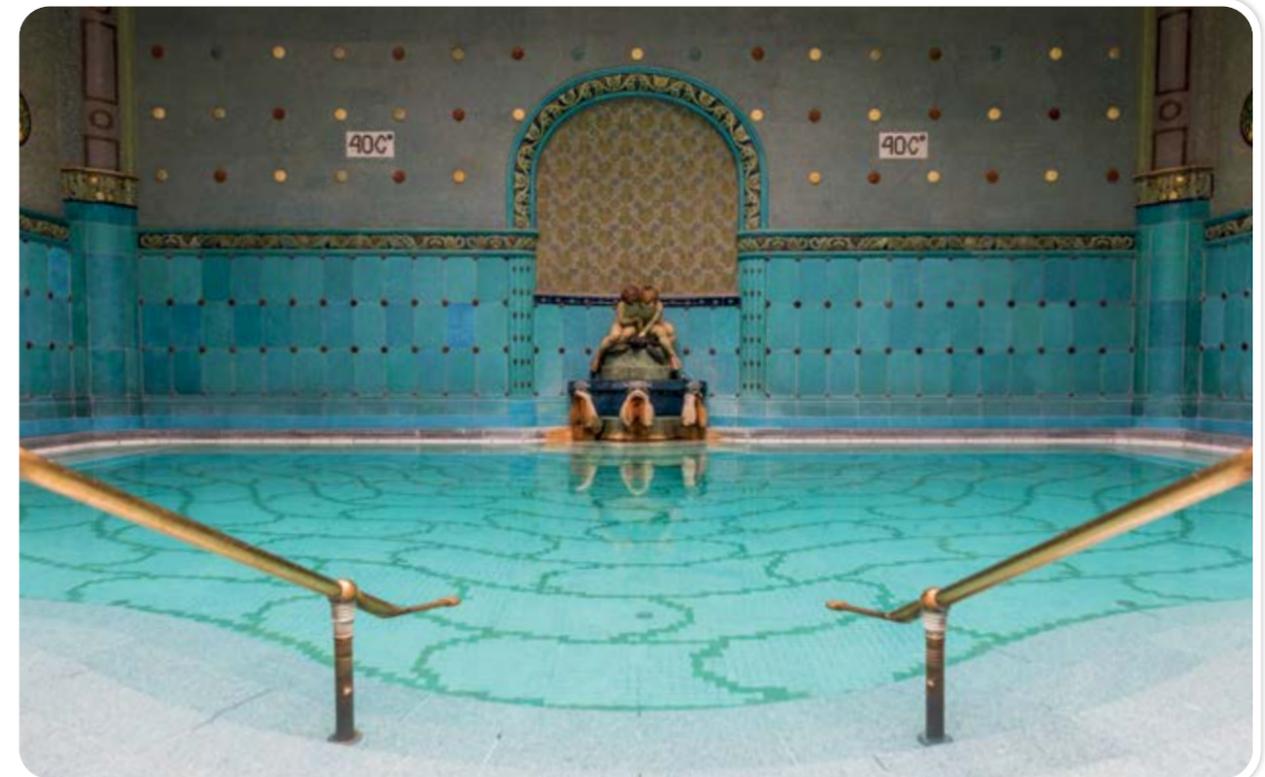
- waters that rise from the depths,
- if they emerge spontaneously, they have a minimum temperature of 20°C,
- if they are drilled artificially, they have a temperature of at least 30°C. This water is warm, but may not have mineral or medicinal properties.

**Characteristics of mineral waters:**

- water that rises from the depths or from drilled wells,
- contain at least 500 mg of dissolved minerals per litre,
- are free from substances harmful to health. Mineral waters come from deeper layers of the earth and are richer in minerals than surface waters.

**Medicinal water**

- a type of mineral water which is considered to have medicinal properties on the basis of its physical properties or chemical composition, as governed by a health regulation – in other words, it is certified to be suitable for the treatment of diseases.
- Water can be categorised as medicinal after passing bacterial, chemical and various other tests, subject to continuous monitoring and repetition.
- The mineral content of medicinal waters can be up to ten times that of mineral waters. This is why the amount of time that may be spent in medicinal water or the amount of medicinal water that may be consumed is limited.



## INHALE, EXHALE

Air pollution is the environmental problem that affects most people, mainly – but not exclusively – those living in cities. According to the WHO (World Health Organisation), air pollution is responsible for one in eight deaths. But what causes poor air quality?

Factories, transport and, yes, household heating are all responsible for so-called small particulate matter (PM10 and PM2.5) emissions.



PM is an abbreviation for particulate matter, which means dust floating in the air. Why, is there also non-floating dust? Yes, there is! It is called settling dust.

The good news is that, because it is partly caused by the way people live, we can improve it! How? For example, by choosing environmentally friendly transport, conscious shopping or by never burning waste under any circumstances. This way, apart from avoiding having to pay hundreds of thousands of forints in fines, we also don't make our environment, and therefore ourselves, sick.

For solid fuels, it is better to choose wood for heating rather than coal, making sure that the wood is as dry as possible. (If the wood is not dry enough, it is best to set it aside to dry for a few months in a well-ventilated place under a roof.)

### Why is wet firewood not good?

Buying wet wood means that the weight of the water is included in the weight of the wood, and we pay for it as well; also, part of the energy resulting from burning wet wood is used to evaporate the water. Besides, dry firewood has much lower particulate emissions than wet firewood, not to mention coal or lignite.

### Why is it so important to pay attention to air quality?

What we breathe in, we are likely to breathe out. Particles of airborne particulate matter, however, are so tiny – less than 2.5 micrometres – that we can't breathe them out; instead, they enter our lungs and from there get into our bloodstream, where they can form clots, causing thrombosis, strokes or heart attacks. In less serious cases, they can 'only' cause respiratory diseases such as asthma, which is becoming increasingly common in Hungary, especially among children, who are much more sensitive to poor air quality.



There are two types of smog (smoke fog):

- One is the so-called London-type, also called reductive smog. It typically forms in winter, in windless, high humidity air, when there is warm air above the lower, cold layers of air. In this kind of smog, the main air pollutants are the result of coal combustion, as the smoke contains sulphur dioxide, carbon monoxide and dust.
- The other is the Los Angeles-type, or oxidative smog. It is caused by traffic and is typically generated in summer, also in calm weather. Nitrogen compounds in vehicle exhausts break down oxygen molecules in the air into atomic oxygen. The oxygen is converted by photochemical reactions into ozone, which is toxic to humans. Vehicles also emit dust, especially diesel engines.

Thus particulate pollution and atmospheric conditions together are responsible for the formation of smog.



If you want to know where the air quality is the best or worst, check it out online.



### YOUR TURN!

#### WHAT TO DO WHEN THERE IS THICK SMOG

- Open the windows when air pollution is at its lowest. Next to a busy road this may be at dawn, but it may vary according to local conditions.
- Don't play sports outdoors when the smog is thick. Avoid busy places when playing outdoor sports.
- Wear a mask if necessary.

### THE FIVE HEALTHIEST CUISINES IN THE WORLD



#### YOUR TURN!

Try to guess which countries made it to the top five on the list of the healthiest cuisines, and then read the list! You might be surprised!



#### Fifth place: Lebanon

Lebanese cuisine is becoming increasingly popular worldwide. Since its dishes also contain fatty ingredients, Lebanese cuisine is only fifth on the list.

Other dishes, however, make it one of the healthiest cuisines. Lebanese menus often include sauces made from sumac (a herb), pomegranate and lemon, as well as cabbage, lentils, onions, garlic, bulgur (broken wheat) and rice. Their traditional dish is creamy hummus, made from chickpeas. Have you tried it? You should!



#### Fourth place: India

While the versions of Indian cuisine popular in the West are not necessarily healthy, traditional Indian dishes have earned fourth place because of the anti-inflammatory and disease-preventing properties of the spices used. The best example is vegetable curry. This traditional dish, which contains only vegetables, is known in many versions in different parts of the country. The recurring ingredients include a vegetable broth base, coconut milk, garlic, ginger, coriander, cinnamon, cauliflower, chickpeas, tomatoes, carrots, lime, spinach and sweet potatoes. It's as if the recipe was written by a GP, not a chef!



#### Third place: Japan

Japan boasts the highest number of people over the age of 100 in the world, so it's no surprise that Japanese cuisine is in the top ten. Green tea, fermented soy, some indigenous mushrooms, dried seaweed and yams (a tropical plant) have proven benefits. But it's not just the ingredients that make a dish healthy. It's also the way it is prepared. Steaming or roasting for a short time in a little fat retains more vitamins and beneficial nutrients in the ingredients.

In fact, the Japanese eat many foods raw that are cooked or fried elsewhere. This only seems strange until you taste a really good sushi.



#### Second place: Greece

The much-lauded Mediterranean diet is represented in the list by Greek cuisine, which comes second worldwide. Most of their dishes contain olives, garlic, tomatoes, various seeds, fresh fruit and yoghurt. Their traditional dish is mousaka, based on roasted aubergines and tomatoes, served with minced meat and a yoghurt sauce. Greece is world famous for its salads made from healthy ingredients such as beans, chickpeas, peppers or even sardines. They are not only healthy, but also delicious! Who needs a better combination?



#### First place: Chad

The winner is a little known African cuisine. The Central African country came out on top because most of their food is freshly prepared and, unlike semi-prepared food, is free of preservatives, saturated fats and large amounts of salt. Chad's national dish is "boule", a dish of thick porridge. It is made up of various grains: corn, millet and the edible grain sorghum. Their meals usually include nutrient-rich okra (an African vegetable) or dried pimento peppers, guava (a tropical fruit), mangoes and cassava (a tuberous plant), all of which are produced locally. In Chad, in addition to the above, lean mutton, goat meat and fish are most commonly consumed. By producing the ingredients locally and eating them fresh, they not only protect their health but also the environment. Is there anything healthier?



#### YOUR TURN!

- Look in the list for food ingredients that you know, and those that you haven't heard of.
- Which ingredients are widely available in Hungary? Which ingredients from the top five list have you read about in connection with more than one country? Do you eat any of these ingredients frequently?

#### Don't just think about your belly!

In addition to eating properly, you can boost your health by living an active and healthy lifestyle, both mentally and physically. Regular exercise, leisure time in a clean environment, avoiding stress and harmful addictions can really improve your quality of life.

Health is therefore largely – but not exclusively – the responsibility of the individual. Much depends on the quality and availability of education, health and social services in the country where you live, the natural conditions (climate, soil, water supply), the clean and healthy environment, working and living conditions, peace or conflict, and the respect for fundamental human rights. For example, where there is a drought and a lack of nutritious food and drinking water, if there is a war raging, the area is controlled by a military regime or the environment is severely polluted, people struggle with everyday survival and have much fewer opportunities to live a healthy life.

### VIRTUAL WATER

We encounter water regularly in the home when bathing, washing dishes and clothes and using the toilet, as well as when watering the garden, washing the car or drinking. "Virtual water", however, which is less visible, is also present in our everyday lives. Virtual water refers to the amount of water used to produce and manufacture a product. So the clothes you wear, the food you eat, the electricity you consume, the means of transport you use, and, among other things, the animals you keep all contribute to your daily water consumption.



### PACKAGING WATER

The actor who plays Aquaman set up his own company distributing water in aluminium cans; he named the company Mananalu. Mana is the name of the sacred spirit of life, and Nalu is a powerful wave that crosses the ocean. Hence the name is meant to represent the impending wave of unstoppable change by promoting the use of aluminium, which can be recycled endlessly, as opposed to single-use plastic bottles. This, of course, means that it is only sold where waste is collected separately, and that each can is delivered to its destination.

In Switzerland, the 2020 Environmental Shame Award went to a luxury bottled water made from melted ice from Greenland and shipped to Europe from Canada. Wonder why that was!



### HUMMUS OR HUMUS?

Do we eat it, or do plants feed on it?



Remember the compost and the chickpeas? But which is which? Now let's explore raised beds!

*Humus* is the "end product" of composting, a soil-like material rich in nutrients and organic substances that has been composted to the point where plant remains are no longer recognisable in it.

*Hummus* is a delicious creamy spread made from cooked chickpeas and garlic, lemon juice, salt and sometimes sesame cream, a Mediterranean delicacy which is popular with vegetarians because of its high protein content.

### DOMESTIC SUPERFOODS

Goji berries, chia seeds, cashew nuts, quinoa: strange and very trendy-sounding names of ingredients that are certainly healthy since everyone eats them. Or are they?

The changing fashion trends are not just about what we wear, but also about what we eat. There are times when we all love Italian cuisine and then suddenly we switch to Indian. A fashion fad can also popularise dishes that are, let's face it, neither tasty nor healthy.

Fortunately, superfoods are a different story! 'Superfood' is a term used to describe ingredients that are high in nutrients, antioxidants, vitamins and minerals. But there's a big problem with them: they come from exotic places far away, so the greenhouse gas emissions from transporting them are significant.

#### Are there domestic equivalents for these superfoods?

Thankfully, not only do they exist, but in many cases they are even more super than their trendy foreign counterparts! For example, sunflower seeds contain more vitamin E than cashews, while rosehips contain seven times more vitamin C than goji berries. But it's also worth mentioning the ever-popular chia seed, which is easily beaten in omega-3 fatty acid content by flaxseed. Finally, quinoa – popular for its high fibre content – has exactly the same amount of fibre as Hungarian buckwheat.



Make a conscious choice and look for local seasonal produce, as this way you're not only doing the environment a favour, you're also doing your health a favour!

## SUSTAINABLE RESTAURANTS

You don't only vote with your money when you buy clothes or groceries, but also when you go out to a restaurant with your family or friends. Where and what you eat makes a difference. If you want to make conscious and responsible decisions, you should choose a place that is certified as a Sustainable Restaurant.



*What practices do these restaurants and cafés use to reduce their ecological footprint?*

Fortunately, there are now more and more Sustainable Restaurants all over the country, and some of them are even stricter than the above criteria because sustainability is the basis of their business philosophy.

*The criteria are the following:*

- They do not waste food, water, energy or packaging materials.
- They collect waste separately.
- They use at least 1 environmentally certified cleaning product.
- They offer at least 1 organic basic ingredient/product.
- 1–5 basic ingredients are obtained from nearby producers.
- At least 2 vegetarian main courses are featured on the menu.
- At least 1 of the products not available in Europe is certified as environmentally friendly and/or Fair Trade.
- They make continuous efforts to reduce environmental impact.

The certification is awarded by the Heroes of Responsible Dining Foundation, which is also the initiator of the Plastic Free August and Palm Oil Lent campaigns.

### No leftovers

Research shows that the average Hungarian “produces” 68 kg of food waste every year. Multiplied by the population, this means that 680,000 tonnes of food are bought unnecessarily in a year, and we are also putting unnecessary pressure on the environment through food production and “waste”.

The “No Leftovers” programme was launched with the financial support of the European Union’s Environment Sub-programme, at the initiative of the National Food Chain Safety Office (NÉBIH), with the aim of reducing domestic food waste. In order to reduce food waste, it aims to:

- bring about positive changes in the food-wasting habits of households (families),
- improve the knowledge and awareness of students,
- identify and disseminate good practices,
- establish international links and examples to help bring about positive change.

## COMPOST BASKET – VEGETABLE GARDEN FROM GREEN WASTE!

A circular economy in my back garden!



Do you know how it works? We create two concentric circles: the inner one for green waste and the outer one for herbs and tomatoes. As nature’s million little decomposers are constantly at work, the compost heap decreases, and the soil in the outer circle becomes richer in nutrients, which our plants absorb and we enjoy eating them. The cores and stems can go back to the top of the inner circle, and we close the circle!

What makes it work? The compost heap is actually a wonderful ecosystem that keeps itself in balance so the moisture content and structure of the soil is always in an optimal condition. What can I throw in? Basically any organic waste, either from the kitchen or the garden. Vegetable and fruit scraps, coffee grounds, tea grounds, hedge and grass clippings, dried flowers – you can use them all!

And what should I plant? Whatever you like; feel free to experiment! Tomatoes, lettuce, basil or parsley are easy to grow. Besides giving a sense of achievement (mental health), they also boost your physical health because you haven’t treated them with any chemicals and you’ve let them grow at their own pace. They’re also much tastier in general, with several times the vitamin and mineral content of the chemical-laden and tasteless store-bought versions.

How to make a compost basket? Poke sticks or stakes into the ground to form two concentric circles, making the inner circle taller than the outer circle. Run thinner twigs among the stakes, making sure that air, the humus in progress and centipedes, beetles and worms can get through the gaps. First, fill the outer circle roughly half to three quarters full with soil, and then throw any green waste generated as a result of your gardening efforts into the inner circle. Instead of twigs, you can also loosely place some used bricks around the circle. Depending on the time of year, you can plant something right away or wait till next spring. Until then, fill the inner circle with organic waste.

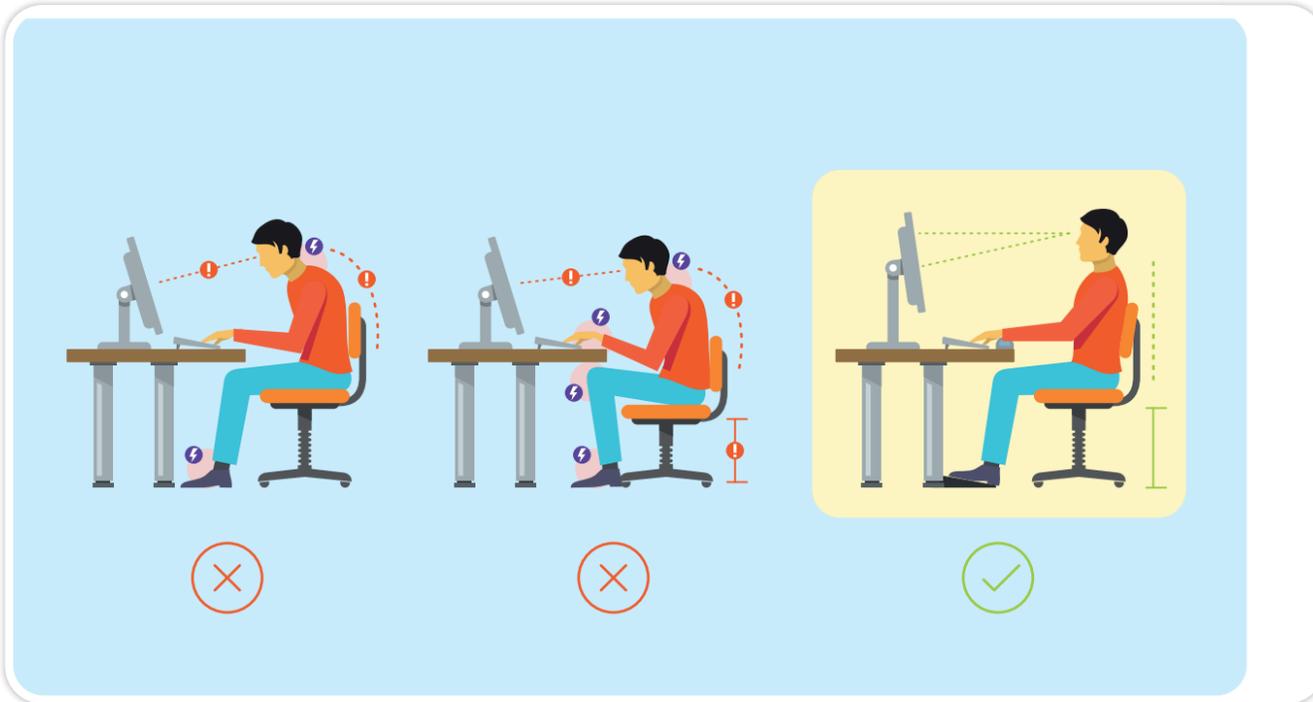
### Compost basket



## DIGITAL DIET

The average European teenager spends more than 6 hours a day in front of a screen (smartphone, laptop, TV, etc.). This is roughly the same amount of time they spend outdoors in a whole week. A lack of exercise and time outdoors can cause both short and long-term problems. Examples include obesity, insomnia and poor social or even language skills.

Long hours spent in front of a screen can also cause visual impairment as well as head, neck and back pain. The most common causes of these symptoms are the noise of machines in airless, enclosed spaces, poor posture and inadequate lighting.



To prevent adverse effects, it helps if the centre of the screen is in line with your eye level, and your neck is in line with your spine. Ventilate the room regularly and take "screen breaks"! Your screen should be neither too dark nor too bright, and the letters and small details should be clearly visible. However absorbed you are in what you see on the screen, don't forget to eat and drink!

But it's not just the amount of time we spend in front of the screen that affects us; it's also the content and the way we use it. If you are not careful and aware enough about your content choices and internet use, you can easily become vulnerable. In the online space, as in the physical world, anyone can become a victim of abuse. This generally comes in the form of cyberbullying on social media platforms.

The bully can be younger or older, but it is very common to be a peer of the person being bullied. Bullying can take on many forms. It can be repeated, hurtful remarks from a close acquaintance for example, defamatory messages, malicious gossip or even sexual harassment from a stranger. This is why you should always be careful when using the internet. It is important that you feel safe.

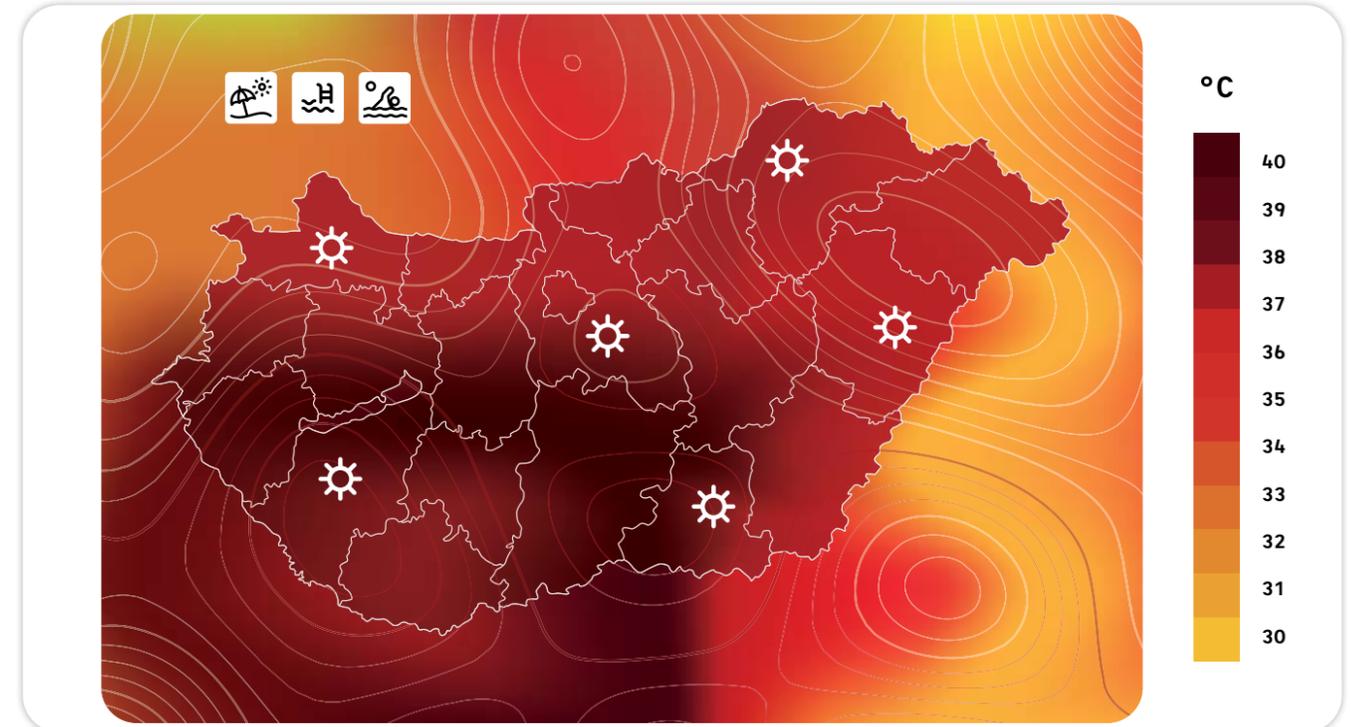


- Ask for help from those you trust, and feel free to call Blue Line on 116-111. The helpline is available free, 24 hours a day.
- You can only benefit physically and mentally from spending more time in nature. Challenge yourself and start a digital diet to improve the ratio of time spent in front of a screen compared to time spent in nature – i.e. for you!

## WEATHER FORECAST

Dear readers, as the graph below shows, the heatwave that has been going on for 22 days will unfortunately not be receding any time soon, and as in recent years, we will once again celebrate our public holiday with a drought and in sweltering heat (average temperature over 35 degrees Celsius).

We can only expect some relief from the heat in the northern and north-western parts of the country, but there the residents will have to contend with dust clouds brought in by Central European cyclones. As in the past two months, rain is not expected in the coming days either. Outdoor fires are prohibited in all parts of the country due to the drought.



As the vegetation has dried out, no significant amounts of allergens are expected, but airborne dust levels are above the alert thresholds in all the major cities. To prevent a further increase in the summer dust smog, people in Budapest, Győr, Székesfehérvár and Debrecen should avoid driving altogether, and are strongly advised to wear dust masks on the streets.

During the next few days we ask everyone to be mindful of relatives in the north who are sensitive to weather fronts, and throughout the entire country those sensitive to air pollution and suffering from cardiovascular diseases and respiratory problems. Those who can should spend the holiday in air-conditioned accommodation.



### YOUR TURN!

Identify the characteristics of the different thresholds. What do you need to know about health, information and alert thresholds? Write a script for a science fiction film with your classmates. The film could take place in 2100, when all climate problems have been solved by mankind.

Show the everyday life of the Kovács family in this environment.

Get into a time machine and imagine the same situation with your own family. Make it the subject of a short story or a film: My family's everyday life in 2100.

Don't leave out the IT opportunities either. You can make a presentation, an animation or a video. Create sets and costumes. The funnier the better!

### What does 'palm oil free' mean?

NEW EMAIL

To: Green Planet Editorial Office

From: Ábel P.

Subject: Palm oil

Dear Editorial Team,

I bought a chocolate granola and it said "palm oil free".

What does this mean? Why is palm oil special?

Thanks for your answer.

Ábel



Dear Ábel,

There are many names on product labels that indicate the palm oil content or the ingredients made from palm oil. Some usual names for palm oil you may come across include: kernel, palm oil kernel, palm fruit oil, palmate, palmitate, palmityl alcohol, palmolein, glyceryl stearate, stearic acid, elaeis guineensis, palmitic acid, palm stearin, palmitoyl oxostearamide, palmitoyltetrapeptide3, sodium kernelate, sodium palm kernelate, hydrogenated palm glycerides, cetyl palmitate, ethylhexyl palmitate/cetyl palmitate, vegetable oil, vegetable fat, sodium laureth sulfate, sodium lauryl sulfate, sodium lauryl lactylate/sulphate, ethyl palmitate and palmityl alcohol.



Fortunately, in response to consumer demands and environmental regulation, more and more products are now labelled to show which plant oil or fat has been used, and whether the plant was sustainably grown.

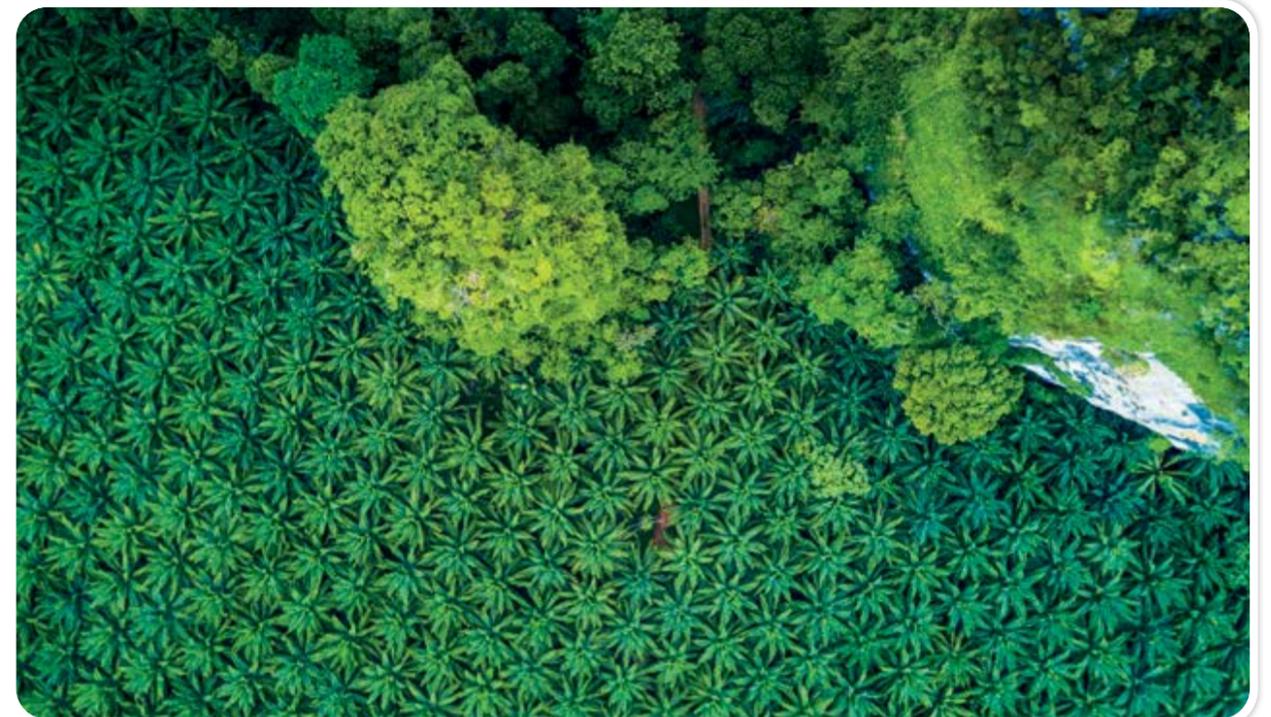
Oil palm is a highly versatile plant, which is cheap to grow in large quantities, and the oil from its fruits is used in the food industry, for cosmetics, detergents and biofuels. As well as being cheap, palm oil is favoured by the food industry because it can replace hydrotreated vegetable oils, which increase the risk of cardiovascular disease.

This is somewhat contradicted by the fact that palm oil has a high content of saturated fatty acids, which carry similar risks. It is used as a stabiliser in many foods, mostly added to biscuits, bakery products, processed and semi-processed foods and chocolate. It must be shown among the product ingredients.

Oil palms originated in West Africa, but the largest plantations were created by burning the indigenous tropical rainforest in Malaysia and Indonesia, and unfortunately they are still being established today. In Borneo and Sumatra, the proportion of forest cover is decreasing at an alarming rate, with 28 football pitches (20 ha) of rainforest going up in flames every day. Burning releases large amounts of carbon dioxide into the atmosphere, the soil erodes in the absence of vegetation, and the chemicals used to increase yields damage natural waters.

A rainforest is the most diverse biocenosis on earth, and eliminating it also results in the loss of habitat for animals such as the orangutan. Plantations that have only been used for a few years due to soil depletion cannot be reclaimed by the original vegetation, and artificial reforestation of the rainforest, which is very diverse in terms of plant species, is not possible either. Recent efforts are being made to create quasi natural strips between the remaining patches of forest to allow animals to pass through.

A number of initiatives have been launched to save habitats, and more and more companies are trying to buy palm oil from responsible sources where neither wildlife nor the local people are exploited. Thus we recommend that if you are not buying palm oil-free products, you should at least choose products containing palm oil from responsible or sustainably managed sources. If you can, check out how the company certifies it!





Puzzle

Answers

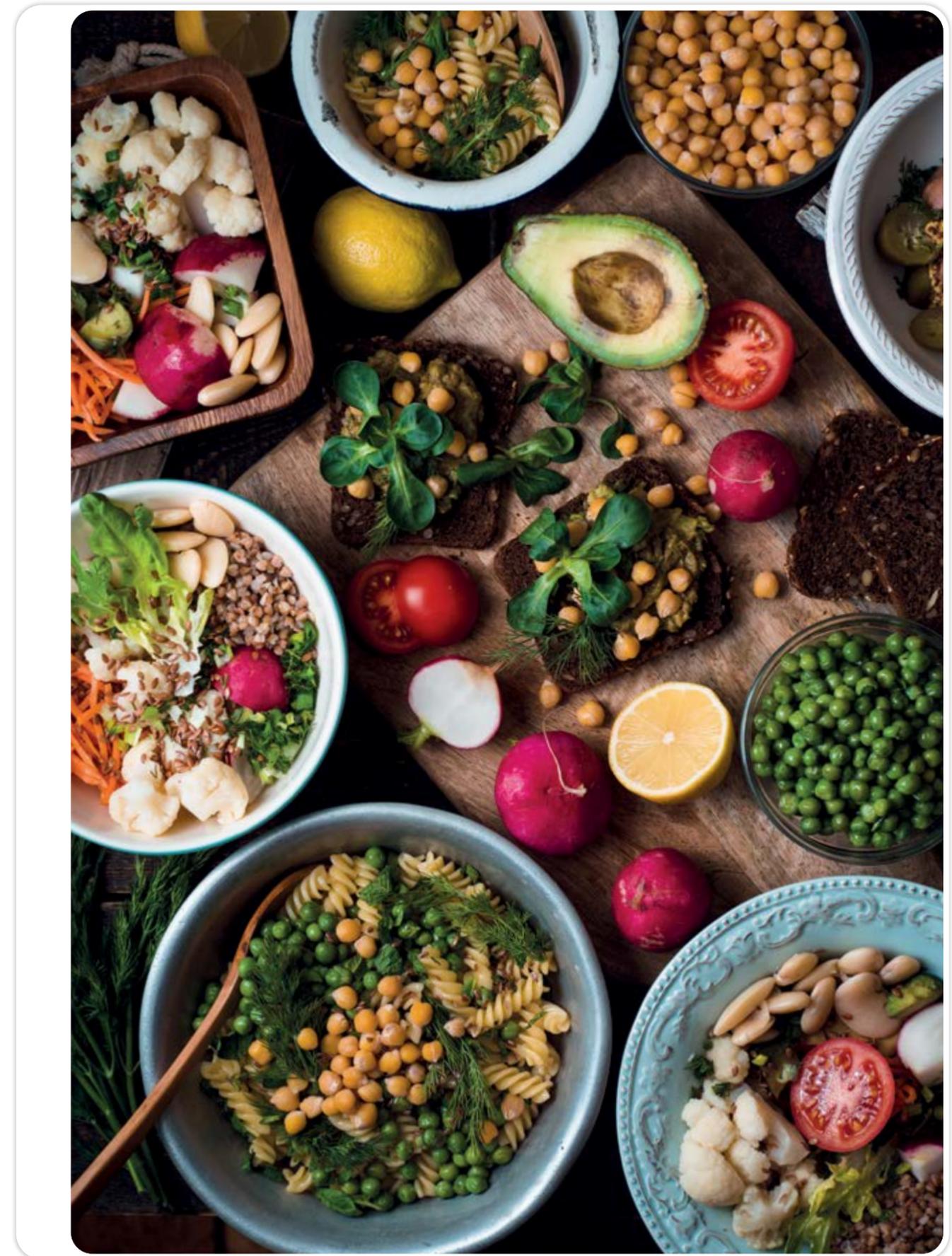
The inside of a hand + a viscous substance	1.
Designate + 'and' in Latin	2.
A domain suffix used on the internet + send a letter	3.
Singular masculine pronoun + a key on your laptop keyboard + chemical symbol for hydrogen	4.
Abbreviation for Swipe Up + a dirty mark + a skill for doing something	5.

THINK, CREATE, RESEARCH!

- With your classmates, make an information poster for the school corridor. The poster should include a diagram showing the factors that influence health and how they interact. The aim is for passers-by to be able to understand the message immediately.
- Look around your home, and identify foods that contain palm oil. See if you can replace them with palm oil free foods.
- Make a leaflet showing what other products they can be substituted with.
- Form three teams.
  - one should be made up of representatives of an oil palm plantation company producing for the global market,
  - one with members of a local environmental and rights organisation,
  - and the third should be a team of buyers.
 The first two teams should prepare and argue for and against the use of palm oil. Try to convince as many customers as possible of your point of view.
- Choose two products that you often buy in the shop (e.g. chocolate, apples). Create long and short supply chains for the same product.
- Find and make a presentation of food quality labels.
- Form three teams.
  - one of them should present arguments for the consumption of tap water,
  - the second team should argue in favour of drinking bottled mineral water,
  - the third team should be the consumers.
 The first two teams should prepare and argue for the position they have been given. Try to convince as many consumers as possible of your position.

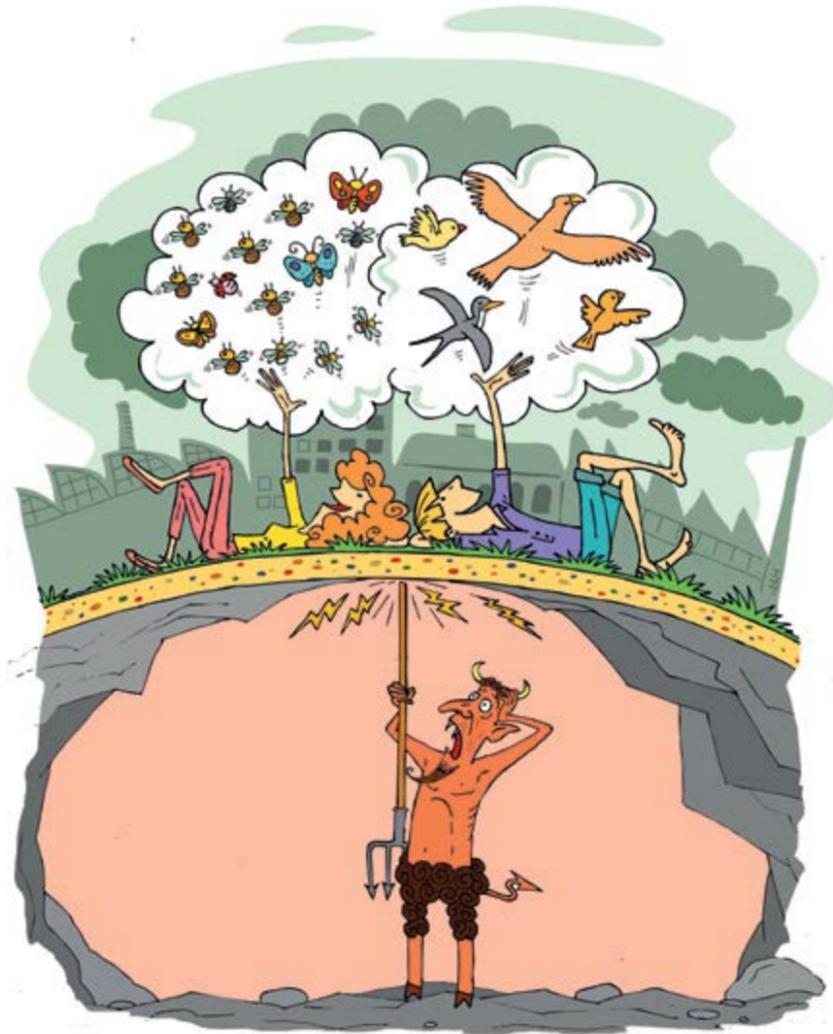


Solutions: 1. palm oil, 2. market, 3. compost, 4. health, 5. sustainability





# Building a vision



## CONTENTS

- WEARING PYJAMAS TO WORK
- CLIMATE SCARE
- DON'T BE AN OSTRICH!



## DEAR READER,

We live in the *Anthropocene* epoch – that is, the age of mankind. It is the period of the Earth's history when humans determine the present and therefore the future of the planet, which is both good and bad news. It is bad because many destructive processes have started, are continuing (and will continue) as a result of human activity. These include loss of biodiversity, an increase in water pollution and climate change. The damage can be reduced and some of it can be reversed.

This is why cooperation between states, between different organisations and between individuals at local level has emerged. This is why education has a major role to play, because awareness and conscious action are crucial in shaping our environment.



As the previous chapters have shown, sustainability is more than just nature conservation. The various topics and issues are interlinked. For example, biodiversity cannot be treated in isolation from poverty, food security, sustainable production or consumption, since food production and food acquisition are one of the main causes of the loss of biodiversity. The UN's Sustainable Development Goals therefore seek to address global problems in a complex way, across the most diverse areas of human existence.

Many young people have fortunately joined the fight for a more liveable world. We will tell you about some of them.

Below you'll read about young people who started the youth climate movement and stood up for girls' education. We also have examples to follow in our own country. Nevertheless, it is the individual actions that make the difference. If we all try to make our own lives greener, if we are compassionate and show solidarity with each other, we will already have done a lot to make the world more sustainable.

And we want to give you some ideas about how this can be achieved.  
Happy reading!

## WEARING PYJAMAS AT WORK



With the outbreak of the *coronavirus pandemic* in 2020, a good number of companies instructed their employees to switch to a “home office”. Home officing means working from your own home. Many companies are contemplating continuing with this form of work, which existed before the pandemic anyway, because of its popularity and the savings it brings. But what do employees think?

– *What experiences have you had so far?* – I ask my interviewee, a programmer who has been working from home for the past six months.

– In the IT sector it is normal, even expected, to have the opportunity to work from home from time to time. Our work allows this because all we need is a computer. Obviously, not all jobs can be done from home. The pandemic has left companies with little choice but to let their employees work from home if they want to continue to operate. Also, some companies are finally beginning to realise that they have to give in to this demand, which has been growing for years. Young workers entering the workforce for the first time are demanding significantly more freedom and flexible working conditions than their parents’ generation, thanks to IT, which has opened up new opportunities.

– *Why is it good to work from home?*

– I can achieve a much better work-life balance. It used to be a huge stress to get the kids to nursery and school on time. Besides, I’m a night owl: I can concentrate much better at night. By working from home, I can reorganise my working hours; of course, there are still periods when I work to a fixed schedule. One other advantage is that I don’t waste time commuting to work and I’m free of the stress that goes with it, not to mention the costs I save on rent or fuel. I’m also able to manage my days much better, and I think I’ve become much more independent in carrying out my tasks at work.

– *And what are the disadvantages? Are there any?*

– Well, I can’t honestly say that there are only advantages. It has happened several times that I didn’t even get dressed; I worked the whole day as I started in the morning, in my pyjamas. By the evening I was in a distinctly bad mood. There is a risk of getting too comfortable, lonely or robotic, but this can be overcome if I make a daily schedule for myself that takes these factors into account. Work and personal life can often overlap. Even though I have a study in my house, many times my little son has run in to ask for something, or the cat has jumped up on my lap during a meeting. The technology gremlins can also make our lives difficult. For example, when a meeting is interrupted by internet problems.

– *Overall, which way do the scales tip?*

– Definitely in favour of the home office, as it gives businesses a happier, more rested and less stressed workforce, which is good for all companies employing people, and of course for the employees too. Further west of us, this form of employment was introduced a long time ago, and people are content with it. Let’s not forget that working from home also reduces the impact of transport on the environment, and it is financially better for companies as they can maintain smaller, cheaper offices.

– *So what is the barrier to its adoption in Hungary?*

– Lack of trust. Unfortunately, we still like to assume the worst about our fellow human beings. Companies are afraid that with so much freedom not only would the amount of work be reduced, but employees would take advantage of their situation, which does of course happen. As long as the work culture involves taking a break from work as soon as the boss looks the other way, trust will not increase. On the employer’s side, it is important that the expectations concerning work are performance-centred instead of being time-centred, and on the employee’s side that there is autonomy and responsibility. Until both sides change their attitudes, it will be impossible to create a more trusting atmosphere.

## YOUR TURN!

- What do the adults around you think about working at home? Ask them and share your experiences with your classmates.
- How would you like to attend an online school – which is very similar to a home office – in the long term? How about your friends?
- Make a table and write down your arguments for and against home schooling. Share your experiences and opinions with each other.

## WHERE IS THE WORLD GOING?

The world is changed. I feel it in the water. I feel it in the earth. I smell it in the air...

These words are uttered by the Elven Lady Galadriel in J. R. R. Tolkien’s famous *Lord of the Rings*, but it is as if they are not only about Middle-earth. One of the most important issues we face today, which affects both our present and future and which is being addressed both locally and globally, is climate – i.e. the issue of climate change, or climate warming.



## What is climate change?

The climate system is made up of the atmosphere, land, the oceans, the biosphere and solid water, i.e. the *cryosphere*. This system can change without any external force. Just think of the alternating periods of ice ages and warming.

However, changes in the average annual mean surface temperatures of more than 1-2 degrees Celsius have evolved slowly, over centuries or millennia, and this slow process of change has allowed organisms living on the planet during a given geological epoch to adapt.

The problem is that the rate of change has accelerated so much in the last 50-100 years that no system on our planet can adapt. Even if we simply look at the mean annual temperatures, it is clear that the mean annual temperature has been steadily increasing since 1950. An increase of around 0.5-1 degree Celsius doesn’t seem like much, does it? Yet it can cause quite significant problems, from biodiversity loss (e.g. coral reef destruction) to the consequences of increasingly frequent extreme weather events (e.g. hurricanes, heavy rainfall, floods, droughts) to the consequences of these (for example, the extent of bushfires in Australia).

Even though most changes are not spectacular at first sight, some are: for example, the melting of snow and ice covering the poles. In the image on the next page, the change in Greenland’s snow cover shows that the increasing mean temperature in the 2000s has indeed caused significant melting. What happens to the ice and snow that melts? It’s exactly what happens to the ice in our drinks in summer: it melts into the surrounding liquid, the ocean, and enters the water cycle.



## THE CAUSE OF WARMING, AND MANKIND

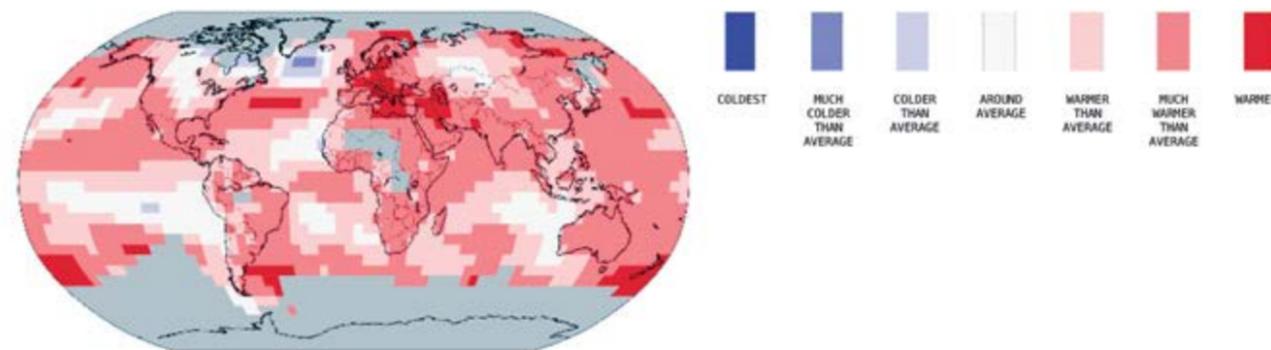
It is common knowledge that greenhouse gases such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and halogenated hydrocarbons contribute to warming. It is also influenced by other natural processes such as solar activity, which further increases the warming, or volcanic eruptions, during which smoke and ash reflect solar radiation and thus reduce the warming. According to the analyses, however, the effect of these is only an insignificant part of the multi-degree warming.

**The increase in greenhouse gas emissions into the atmosphere has several causes linked to human activity:**

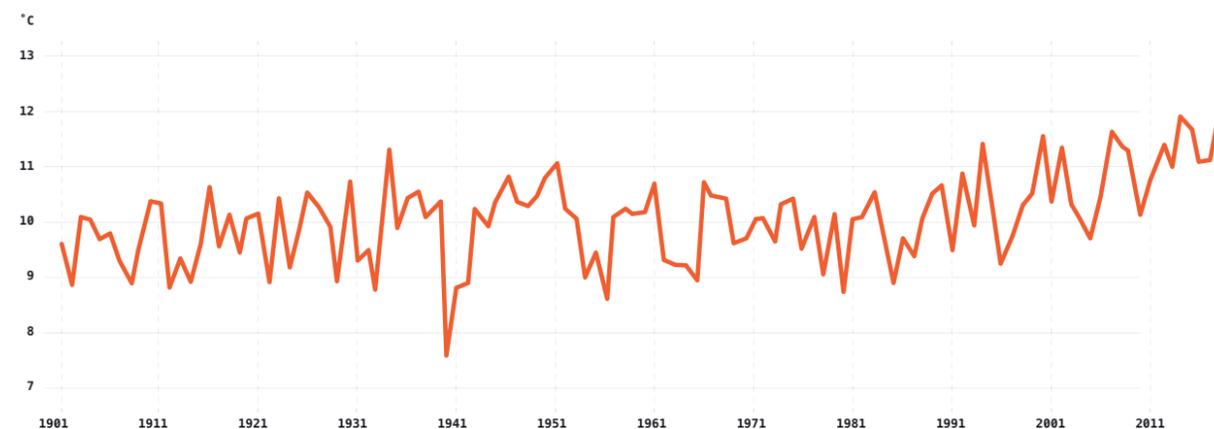
- heating and, more recently, cooling (specifically, emissions linked to our energy consumption);
- the release of gases into the atmosphere from other activities (transport, livestock, industry, etc.), in particular the release of 'captured' carbon dioxide, resulting from the burning of oil, coal or even trees;
- changes in the structure of land vegetation (deforestation, destruction of natural grasslands), resulting in a slowing down of the capture of CO<sub>2</sub> (due to photosynthesis) or its rapid release into the atmosphere.

What does this mean in numbers? Let's look at the following diagram:

LAND SURFACE AND OCEAN SURFACE WATER TEMPERATURES COMPARED TO PREVIOUS MEASUREMENTS JANUARY-DECEMBER 2018



AVERAGE ANNUAL NATIONAL TEMPERATURES IN HUNGARY 1901-2019



One sign of faster melting is that while about 40-50 gigatonnes of ice melted in Antarctica in the decade between 1979 and 1990, and 160-180 gigatonnes melted between 1999 and 2010, the following seven years saw the melting of an additional 250-270 gigatonnes, which equates to 270,000,000,000,000 litres of water.

All this water is raising the ocean levels. Combined with the accelerating melting of ice on Greenland and that of the glaciers, it poses a real threat to coastal – especially low-lying – countries, such as islands and even the Netherlands.



Another very obvious consequence of global warming is the increasing extremes of weather. For example, when there is precipitation, there is a lot of it, and when there is not, there is a much drier period than the previous average. Extreme temperature fluctuations are also becoming more frequent. Multi-year averages for daily precipitation are regularly being surpassed, new temperature records are being set, and heat warnings are becoming more frequent.

GREENLAND SNOW COVER (WHITE) AND HOW IT IS SHRINKING (RED)



**Where does this all lead?**

To determine the impact of our activities on our climate, the IPCC and climatologists use several models. Some of these models are more optimistic, while others are more pessimistic.



**STOP!**

**WHY DO CLIMATOLOGISTS' FORECASTS DIFFER?**

In a system as large and complex as the Earth's biosphere and climate, it is terribly difficult to take all the factors into account. That is why each model has features that enables it to predict some factors more accurately, while others are addressed less accurately. As a result, there are often significant differences between the results of the models.

However, all models agree that the negative trend of climate change affecting us and our environment is undeniable, while its magnitude is difficult to predict, and influence just now.

It is clear that we need to take action to reduce the causes and prepare for the likely impacts by taking the following steps:

- Reducing our greenhouse gas emissions to curb further warming (e.g. by saving energy, reducing fossil fuel use, using alternative energy sources, reducing waste, selective waste collection).
- Reducing the ratio of greenhouse gases in the atmosphere (e.g. by planting forests, creating green roofs, green spaces around houses, planting as many kinds of native plants as possible).
- Facilitating adaptation to the impacts (e.g. reducing temperatures by maintaining green surfaces, using shade and cooling in the shade where possible, instead of using air conditioning).
- This is all based on a change of attitude: determining what we can do, raising awareness among our peers regarding the seriousness of the problems and talking to them about what we can do now and in the future.



**WHAT IS CORPORATE SOCIAL RESPONSIBILITY?**



CSR (Corporate Social Responsibility) means that a company goes above and beyond its legal obligations to take action for nature, the environment and the community in which it operates. However, it is also true that without conviction there can be no result. A company can make a real and long-term difference if its CSR is not just a marketing trick but an overarching way of operating, an approach that employees can identify with. A company that considers it its core business (not just a secondary task) to address social problems is called a social enterprise.



**YOUR TURN!**

- Have you ever seen a 3D printer? If you know how it works, describe it to your classmates.
- Explain what it is and what it is used for.
- How do you think it can be used to reduce or mitigate environmental damage?

**PRINT ME A PAIR OF SHOES!**

3D printing can be polluting if it only satisfies individual needs and ignores environmental impacts, but it can also serve sustainability. The latter is linked to a number of programmes.

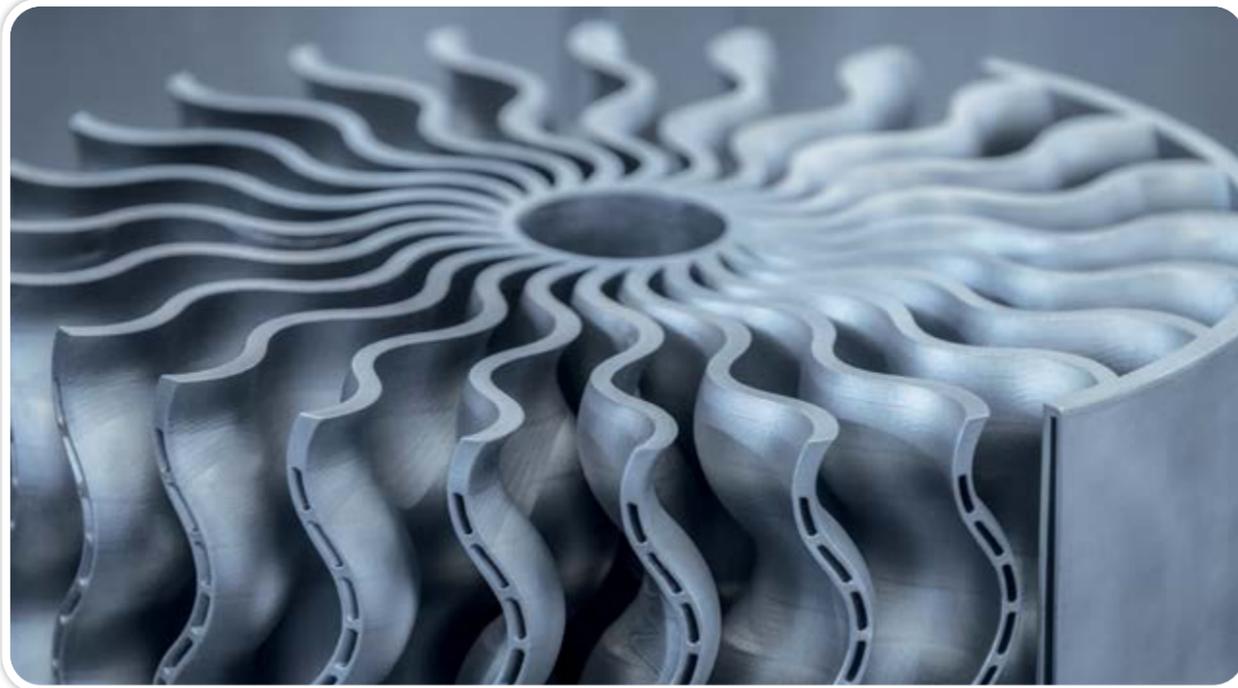
- The main idea of a Netherlands-based initiative entitled Print Your City is to use plastic waste from households to 3D print street furniture to improve the residential environment. The work is done with the active participation of local residents, who can learn about the recycling of plastic and the link between plastic and the circular economy.

The prototype was developed for the streets of Amsterdam. Each bench is made from as much plastic waste as two Amsterdam residents generate in a year.



www.printyour.city

- Some aircraft parts are already 3D printed, and even space stations have been equipped with 3D printers, eliminating the need to store large quantities of replacement parts. If this process is extended to other industries, the environmental impacts of producing, transporting and storing redundant parts could be reduced.

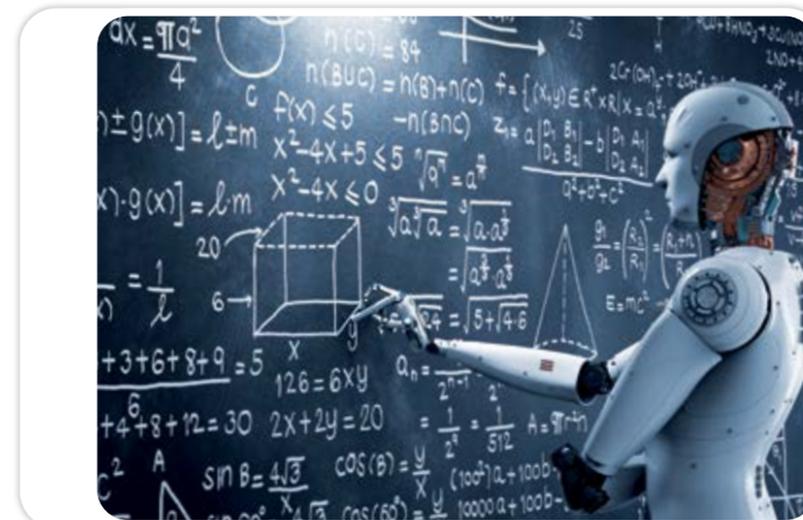


- 3D printing was used to build a six-storey office building in China. It is predicted that by 2027, one in ten products in the country will be 3D printed. In the long term, if recycled plastics are used in construction, even the plastic waste that has accumulated so far will be recycled. Of course, this is only a dream for now. But before you rush to invest in a 3D printer, it's worth thinking about what happens to all the things that are made this way. We can print a mobile phone holder now, but what happens to it when we don't need it anymore? The 3D printer also uses and produces plastic, and although it postpones the material becoming waste, it does not prevent this indefinitely. It is worth looking at the whole life cycle of the product – and preferably from cradle to cradle, in the spirit of a circular, sustainable economy.



## ROBOTICS AND ARTIFICIAL INTELLIGENCE

It is argued that we cannot succeed in the 21<sup>st</sup> century if we think with a 20<sup>th</sup> century mindset. The development of the world, and especially the development of technology, has changed so much and has become so fast-paced that few people can keep up – to the point where a whole industry of vloggers has sprung up to help everyday people navigate their way through technology. Based on current trends, futurologists predict that robotics, which today mainly helps out in manufacturing, will increasingly take over the role of humans in more and more areas.



According to predictions, 70-80% of current jobs will become redundant within the next 20 years. Many new jobs will be created, but it remains to be seen whether workers will be able to get a job.

Young people will be at an advantage, but older people will find it harder to adapt, so retraining will not be a viable option for everyone.

Today, artificial intelligence (AI) can be used to create supercomputers with more knowledge than humans. This is simply because they can store much more information and data, and can find connections among these in a fraction of a second.

For example, the livelihood of young lawyers in the US has become precarious because an

IBM-developed supercomputer named Watson can provide legal advice (albeit only on simple issues for the time being) in seconds. This advice works 90% of the time, compared to just 70% for 'human' advice. In the future, the number of lawyers will fall by 90% and only highly specialised lawyers will be able to stay in the field. At least that is what the future researchers predict.

Watson could take over some of the work not only of lawyers but also of doctors, as it is already playing an important role in cancer diagnosis: the diagnoses it makes are four times as accurate as those made by doctors. The use of such computers, however, also raises ethical questions.

IBM is not alone at the forefront of artificial intelligence. Facebook's pattern recognition software recognises human faces better than humans themselves.



We shouldn't forget, though, that artificial intelligence will not be able to replace humans in many areas. Humour, real creativity, real feelings and real empathy cannot be replaced by a computer.

Robotics and AI also raise a number of ethical questions and are heavily lacking in legal regulation. One good example is self-driving cars, the first of which were developed in 2018, but they are still being tested because they have failed to prevent accidents, which is the most important thing people expect – it seems there is not yet anything that can substitute for personal attention.



But the potential is huge: why would anyone want to own a car when in the future it will be easier to call one and have it pick us up at a given location and take us to our destination? There will be no need to look for a parking space; we'll just have to pay for the distance travelled and be able to do other things during the trip. Children being born just now may no longer need a driving licence or their own car.

Of course, this will also transform the way cities work, as far fewer cars will be needed (up to 90-95%). It will be possible to convert the freed-up parking spaces into parks, which could significantly improve air quality and thus increase people's life expectancy. Of course, these are only assumptions in 2020. We must remember that the future is still ahead of us, and that projections are only possible scenarios, the realisation of which depends on a myriad of factors and their combined impact.



**YOUR TURN!**

- Do you agree with the optimistic vision above of technology supporting our everyday life?
- Do you think that developments – self-driving cars, smart homes – will bring environmental benefits, or will they increase consumption needs instead?
- Discuss with your classmates.

**OSTRICH POLICY**

The term 'ostrich policy' is used to describe the behaviour of someone who is irresponsible, ignores problems, and avoids responsibility. It refers to the behaviour of an ostrich. When an ostrich is breeding, it lowers its head to the ground, as if it were buried in the sand, so any danger passes by.



How is it that so many people and so much effort is made to ignore such a visible phenomenon? As with the coronavirus epidemic, we have seen that many people denied its existence and the proven effectiveness of the means of protection against it. Many only came to their senses when a loved one or they themselves caught the disease.

Some people feel helpless or find the situation itself uncomfortable, so they ignore or deny the problem. It is hard to accept that something will be different – whether we are talking about the virus situation or the changing climate.

**THE THOUSAND FACES OF A LANDSCAPE**

A stream with groves of trees running through a village can be

- a cool, green corridor lined with plants,
- an outdoor classroom, or
- the scene of a romantic date.

But it can also be

- a sewer,
- a garbage dump or
- a source of irrigation water.

The latter three partially or completely destroy the functions of the first three, and besides, they are prohibited.

People in many places have sought to remedy this problem by turning the stream into a canal, dredging it, paving it over, and clearing it of natural vegetation. The results gave a nice and tidy impression. The transformation admittedly didn't really prevent the dumping of wastewater and rubbish, but cleaning with machines perhaps became easier.

**What could be the solution?**

One good solution is for the users of the watercourse to reach a joint decision. They can discuss which function is important to them, how they would like to use the watercourse, and how they would like to maintain it in the future. It does take a lot of time and energy to reach a common standpoint, but it is the only way to make everyone feel that they own the watercourse and are responsible for its maintenance. The pictures show riverbanks of municipalities along the Danube in various states: without human intervention, "over-maintained", and then neglected, or built over and redesigned. First, let's examine how a landscape can look when it has been untouched by human intervention for a long time, and it has been shaped by nothing other than the creatures that live there and other influences of nature.



Near-natural floodplain forest – Gemenc

Let this be the foundation on which we build to see how differently we use the riverbank in some places, and how much the image of the landscape depends on the needs of the people who live there.

This is what the floodplain along the Danube used to look like.

Now let's see a few examples of how the image of the Danube bank has been changing depending on its use.



**1. A semi-natural riverside woodland with a wooden nature trail (Vác floodplain nature trail)**

The half-kilometre-long nature trail in the semi-natural riverside woodland offers visitors the opportunity to observe the wildlife, and learning is supported by brochures and information panels.



**2. Urban beach covered with pebbles/sand, cycle path, playground (Római-part/Roman Beach)**

The Római-part is a popular recreation area in Budapest regularly visited by many people; it is crossed by a cycle path lined with boathouses and restaurants.



**3. Urban shoreline, mown grass, fire pit (Zebegény)**

The urban riverside has been converted into a recreational area by nearby residents, with less original vegetation, grass and fireplaces; the waterfront trees have been preserved.



**4. Urban beach deprived of its original vegetation**

A previously "cleaned up" section that looks abandoned for the time being. If not maintained, it will be taken over by weeds. With sown and trimmed grass and non-floodplain plants, it might look nice at some point. Of course, this also depends on whether you think natural or artificial is more beautiful. The biodiversity will definitely be lower.



**5. Industrial facility – Csepel Freeport**

In this image, the natural environment has been completely obliterated by industrial development. The Csepel Freeport is a completely transformed area, where not only the river bank but also the riverbed has been transformed. The river serves as a waterway and an important factor in industry development.

**6. Urban waterfront with a high embankment, quay and car traffic (Budapest, city centre – quay plan)**

Finally, there is a desire to return at least part of the waterfront to nature and to people. In Budapest, for example, one major problem is that people are cut off from the river by the car traffic on the quay. This award-winning plan seeks to bring the river closer to the city by transforming the built environment, while preserving the flood protection structures.



### DARE TO DREAM BIG!

Young people can support sustainability themselves – either as activists or by solving concrete problems. Boyan Slat, a 16-year-old Dutch student on holiday in Greece, noticed that there was more plastic swimming in the sea than fish. On returning to school, as part of an assignment, he started to work on ocean plastic waste and its clean-up, and devised a system that would use the ocean's natural power to passively capture and compact plastic waste. During his university studies, he further developed his plan and at the age of 21 he founded a non-governmental organisation, "The Ocean Cleanup NGO".

Boyan's goal is to rid the ocean of 90% of plastic waste by 2040. The activities of the organisation are largely supported by community funding and major grants. Boyan's plans initially received a lot of criticism. Their first actual attempt failed, but their second scheme, System 001/B, has been outperforming expectations. Today they are not only cleaning up the oceans, but also the rivers. Every day, 50,000 kg of rubbish is removed from Dutch rivers. Boyan Slat's TED talk entitled "How the oceans can clean themselves" is available on YouTube.

In Hungary there are also many young people who want to do something for sustainability. This is how the 30 Days of Zero Waste Challenge was launched.

Greta Thunberg is another famous sustainability activist who almost every young person has heard of. She is the founder of the School Strike for Climate movement, involving young people in countries all over the world who hold a sit-down strike instead of going to school on Fridays.



#### YOUR TURN!

- Why do you think Greta has achieved such high publicity?
- Who may appreciate her message?
- Why do so many people disagree with what she represents and the way she represents it? It's worth listening to all sides! Organise a debate on the subject.

### ONE SWALLOW DOESN'T MAKE A SUMMER?



The work of volunteers can be invaluable if unexpected events happen or if there are long-term developments. They often arrive first on the scene of disasters to save lives, but they can also play an important role in the long-term rehabilitation of the affected area.



Volunteering is not synonymous with amateurism. Volunteers are often some of the best in their field, whether it comes to providing first aid to those in need or saving endangered species from extinction through years of hard work.



It is estimated that around a billion people around the world are engaged in volunteering. In terms of hours worked, this represents the activity of around 125 million full-time workers. 57% of the volunteers are women, and 43% are men.



One in four volunteers use their skills and talents to help via organisations, while the rest provide direct support to their neighbours and communities. Volunteering often creates a bridge between different political views and cultures.



Although it would be difficult to imagine a world without the work of volunteers, their activities are nevertheless not sufficiently appreciated. Volunteers do not work for money, but it is important that they are acknowledged and recognised.



Volunteers act out of an inner drive and according to the unwritten rules of humanity; at the same time, volunteering offers them the opportunity for lifelong learning, gaining experience and networking.



The European Union promotes volunteering through education and development programmes, such as the European Solidarity Corps.



Dec. 5.

At the initiative of the UN, 5 December was designated International Volunteer Day in the mid-1980s. Let's celebrate them, because they really deserve it!

## GREEN JOBS

It may come as a surprise that there are many exciting (and often well-paid) careers and jobs in the field of sustainability. Let's take a look at some of them.



### Urban development – geospatial/GIS planner

Geoinformatics deals with the management and processing of spatial data. A good geospatial planner can help you design green spaces, traffic zones, or even the property network needed to create a more sustainable urban landscape.

### Environmental sustainability analyst

Identifies and helps address sustainability issues – also in an international context – and contributes to solving complex local problems (e.g. new heat waves and drought-resistant municipalities).

### Environmental engineer

The main objective of an environmental engineer is to improve the natural environment, enabling water, air and soil to be kept clean, improve its cleanliness, and keep it pollution-free – whether for a municipality or a company. An environmental engineer must harmonise local organisational interests, environmental interests and legislation.

### Water engineer

A water engineer works to solve water-related issues and problems in a specific area. For example, what to do if half the annual rainfall falls in one month in the spring? We need a solution to store the water so we don't have problems with irrigation and drought in the summer. How is this possible? Water engineers can give us suggestions.

### Energy engineer

An energy engineer's job is to understand energy systems and be able to design, test and operate related technologies. Truly dedicated engineers will always consider the possibility of using less polluting/renewable energies, and will also seek to reduce the energy demand of the building or organisation under their supervision.

### Environmental lawyer

Environmental lawyers are involved from the legal side in the fight against polluters. Their work can make life easier or safer for entire communities by helping to prevent pollution from a dangerous plant or factory through legislation, enforcing regulations, or by representing stakeholders in the authorisation process or in the event of actual pollution.

### Environmental educator

Typically as part of a teaching, social or communication job, either in a school or in an out-of-school educational organisation (e.g. forest school, museum, zoo), or as a journalist or communication expert on other platforms, an environmental educator imparts knowledge and attitudes on environmental awareness in an experiential way.

### In conclusion

It is important to note, however, that you don't necessarily have to work in a "green profession" to do something for the environment. In any job we can strive to preserve the natural environment, produce as little waste as possible, and consume as little energy as possible.

## HAVE YOU HEARD OF THEM?

There are several organisations trying to mobilise the masses of people, experts and politicians to take action and fight the adverse effects of climate change by achieving real impacts. The following are some of the lesser known organisations/initiatives:



**Covenant of Mayors:** The Covenant of Mayors is the main European movement of local and regional authorities that voluntarily commit themselves to increasing energy efficiency and using renewable energy sources in their areas.



**Under2:** This movement was created before the Paris Agreement was concluded. Its founders are California and Baden-Württemberg. This is a very interesting combination, given that a German federal state and a US federal state created the initiative itself. The aim at the time was to spur the signatories of the Paris Agreement to a more ambitious commitment and to encourage them to adopt actions meant to keep the global mean temperature increase below 2 degrees Celsius.



**IPCC:** Intergovernmental Panel on Climate Change: An organisation established in 1988 at the initiative of the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), and endorsed by the UN General Assembly in a resolution on climate change. Its purpose is to assess and summarise research findings on climate change caused by human activity. The IPCC research team was awarded the Nobel Peace Prize in 2007 for its work. The team included a Hungarian member: Diána Úrge-Vorsatz, who was awarded the Commander's Cross of the Order of Merit of the Republic of Hungary the following year. Interestingly, the International Panel on Behaviour Change (IPBC), a collaboration of scientists working on the behaviour change needed to achieve climate change, has recently been formed.

The above organisations are international, but there are also several organisations working on sustainability in Hungary that are worth looking into. There are also public and civil initiatives, and more and more companies are also working in this field.



## Water hazard?

To: Green Planet Editorial Office  
 From: Péter K.  
 Topic: Water hazard?

Dear Editorial Team,

I don't think that I suffer from climate anxiety, but I'm starting to get a bit worried. I hear a lot about the threat of a water disaster. Are we really in danger?

Péter K.

Dear Péter,

Unfortunately, the answer is yes. Indeed, water and its scarcity are already endangering the health of millions of people, causing food insecurity and destroying ecosystems. We hear a lot, for example, about African countries where – because of droughts – women are carrying water on their heads for kilometres instead of working or studying. Water scarcity is the reason why many women are deprived of learning, which would give them an opportunity to do something different with their lives.

The lack of water has also led to mass migration around the world because no one wants to die of thirst or hunger. But there is also a problem in developed countries. In California, excessive agricultural irrigation forced people to cut their water consumption by 36% in 2015, and in Australia, drought-related bushfires in 2020 were much more widespread than the average.

In addition to scarce water, having too much of it is also a problem. Floods and other water-related disasters (e.g. flash floods, tsunamis, mudslides) account for 70% of all deaths caused by natural disasters. Their economic, environmental and social impact is enormous. They can bring industrial production to a standstill, everything needs to be rebuilt, and they cause livelihood problems for the masses, among other things. Then there is the problem of contaminated water, which puts a huge strain on health services and our environment. Around the world, 6000 children still die every day from waterborne diseases. However, keeping our waters clean is difficult and expensive. What's more, climate change could make these phenomena even more frequent.

But there are also positive initiatives. For example, developed countries are using various techniques to reduce both the amount of water used for irrigation and the amount of pollution. In developing countries, many initiatives are being taken to secure water supplies, conserve water, and protect the quality of flowing water. One thing is certain, local and international cooperation will be required in the future. And that means you too.



## TEST YOURSELF! HOW FUTURE-MINDED ARE YOU?

Take our quick test to see how future-minded you are. For each question, choose the answer you agree with the most.

- If I had a forest,**
  - I would cut down only every second tree for sales purposes.
  - I would try to create a natural biocenosis in my forest.
  - I would create a wildlife park.
- Whenever I hear somebody joking about climate change caused by humans, or not believing it,**
  - I tell them that they are not alone, because many famous people don't believe it either.
  - I try to explain to them the exact ways in which mankind is contributing to climate change.
  - I rather avoid this person. You don't play chess with a pigeon.
- If I had a lot of money,**
  - I'd put some of it on the stock market to make as much money as possible.
  - I would invest it taking the environment into consideration.
  - I would give some of it to support green causes.
- If I volunteered,**
  - I would most likely be asked to do unpaid work that no one else wants to do.
  - I could do work that benefits the environment and society while learning and gaining experience.
  - I would decide for myself how to help; the main thing is to spend my free time in an exciting way.
- When I choose a profession,**
  - my only consideration will be the salary.
  - I want a job that gives me the opportunity to do something for the environment.
  - I want to do something that provides a good income, but in no way causes harm to others.

### Evaluation:

**Every a) answer is worth 0 points, b) answers are worth 2 points, while c) answers are worth 1 point.**

### 0–3 points:

Don't just care about yourself! Connect with others, and pay attention to other people too. You should learn how great it is to work with like-minded people, even when working on your own goals. Not only is it more fun than working alone, it's also more effective.

### 3–6 points:

You're balanced between your own issues and the sustainability issues around you. This is definitely commendable. However, it may not be enough in the longer term, as a liveable future requires a strong commitment.

### 7–10 points:

You are a true future activist! Keep up the good work! Make sure, though, that you are really doing everything from the heart. It is important that your own individual goals, desires and abilities are reflected in everything you do.

Don't forget!

This test is not a real assessment, it is not based on science, it is just a playful way to provoke your thoughts.

## GLOSSARY

TERM	DEFINITION
<b>adaptability</b>	Adaptability means the ability to adapt to changes in the environment. This can be applied to individuals, communities, societies, ecosystems and farming. For example, the adaptability of a biocenosis to climate change is defined by: <ul style="list-style-type: none"> <li>• the severity of the impacts afflicting the biocenosis (e.g. heatwaves, intensity and number of floods);</li> <li>• the condition of the members of the biocenosis (e.g. their health and competencies);</li> <li>• the presence of external factors supporting adaptation (e.g. green vegetation); and</li> <li>• the quality and organisation of relationships between members of the biocenosis.</li> </ul>
<b>biomass</b>	The sum of living organisms and the non-living organic matter they produce.
<b>biomimicry</b>	The application of solutions borrowed from nature. A collective term for technologies that organisms have developed over a long evolutionary time. Nowadays, the most important objective of biomimicry is to apply processes that are tried and tested in nature to manufacture products or for other processes that can ensure long-term sustainability on Earth. For example: Velcro inspired by thistles, ropes inspired by spider thread, ventilation solutions inspired by termite mounds.
<b>carbon footprint</b>	A carbon footprint demonstrates the direct or indirect contribution of human activity to greenhouse gas emissions, converted to carbon dioxide equivalent (CO <sub>2</sub> e). The carbon footprint is a significant part of the ecological footprint.
<b>carbon neutral building</b>	Carbon neutrality (abbreviation: NZEB, or nearly zero energy building) means that during the construction, use or operation of a building, greenhouse gas emissions, i.e. the carbon footprint, have been minimised. The emissions that are not necessary – such as those produced during transport and the production of raw materials – have been compensated, for example by planting trees or implementing a green project.
<b>charity shop</b>	A charity shop is where donors drop off their equipment, objects and clothing that can still be used. So these items do not immediately become waste. They can be bought by anyone at below market prices for second-hand items, usually by people in need. Charity shops also strengthen the social safety net by employing people in difficult circumstances, mostly the unemployed, and thereby providing them with a job opportunity.
<b>circular economy</b>	An economic model in which the aim is to extend the life of products for as long as possible, striving for the durability, repairability and recyclability of raw materials. In this model, products that have already been purchased are given a “second chance” by being repaired, or transformed, loaned or even given away. When a product reaches the end of its life cycle, the materials can be recycled. Thus the amount of waste is reduced and, in addition, the reuse of raw materials and finished products creates economic value. (Source: EC.Europa)
<b>circular product management</b>	A production process, or an element of it, that takes recyclability into account as early as the design and production stages. In addition, arrangements are made for the end-of-life product or its materials to be reused as raw material for the production of a new product. For example: conversion, recyclable and reusable packaging. In this way, no or less raw material has to be extracted from nature and less or zero waste has to be landfilled.
<b>climax community</b>	An equilibrium community of the most diverse composition of a given habitat, climate and soil conditions, resulting from a long evolutionary process.
<b>co-working office</b>	A co-working office is where the people working are usually freelancers, such as contractors, who work in the same location but for different companies, on different projects or tasks. This way they do not need to rent a permanent office each, and they share office facilities, meeting rooms and can build relationships with each other.

TERM	DEFINITION
<b>corporate social responsibility</b>	The activities undertaken by an institution, in addition to its legal obligations, for nature, the environment, people and the community in which it operates. (The term is commonly abbreviated as CSR.)
<b>downcycling</b>	A type of recycling that produces a lower quality product. For example, plastic PET bottles are turned into plastic bags, office paper into toilet paper.
<b>eco-mapping</b>	Eco-mapping is a simple activity that can be carried out together with colleagues (or at school, with students, teachers, residents of a community, family members at home). The aim is to assess and graphically visualise what can or should be changed to minimise the energy, water and waste involved in maintaining a building or a settlement. Human and community needs can also be included, such as seating spaces, lounges, green areas and plants. The resulting maps provide an excellent opportunity for collective discussion, planning and joint action. The eco-mapping of buildings originated in industry, where they assess the environmental impact of a plant's or a company's operations. The results are depicted in graphs, so it is easy to see what is adequate and what needs improving. Eco-mapping was developed by Belgian eco-consultant Heinz-Werner Engel.
<b>ecodesign</b>	A way of designing that takes ecological considerations into account throughout the whole life cycle of a product. These include: the impact of the object on the living and non-living environment; environmental awareness, economy.
<b>ecological corridor</b>	A strip of habitat, preferably covered with natural vegetation, that connects large areas of natural habitat. These connections contribute to the migration of certain species and the maintenance of biodiversity in larger areas. Such corridors can be forest strips left between cultivated areas or floodplains left along streams and rivers with their original vegetation cover.
<b>ecological footprint</b>	Ecological footprint is an indicator, expressed in hectares, of the impact of humans on nature. It indicates the amount of land that is sufficient to produce the goods needed for the current human lifestyle and to neutralise the waste and emissions generated. For example: the area of land or water needed to produce food, housing and utility items, or the area of forest needed to neutralise carbon dioxide emitted during energy use.
<b>ecosystem services</b>	The benefits provided by an ecosystem are called ecosystem services. For example: clean air, drinking water, edible food, raw materials, recreation, carbon sequestration, temperature compensation. This term links nature to society, in particular to well-being and the economy. Unfortunately, the state of ecosystems is deteriorating and many services are being threatened or eliminated, which are costly or impossible to replace.
<b>ecotourism</b>	A branch of gentle tourism that focuses specifically on the discovery, presentation and conservation of natural assets.
<b>endemic species</b>	Also known as a native or indigenous species of animal or plant, which has a particular defined area as its “home”. The Carpathian Basin, surrounded by mountains, is rich in endemic species, such as the Banat peony, the Pilis linen ( <i>Linum dolomiticum</i> ) or the Hungarian meadow viper.
<b>fair trade</b>	A transparent, verifiable chain of trade from producer to consumer, based on the human and material dignity of all those involved in the process. The amount paid out genuinely covers the material and labour inputs of producers and contributors.

TERM	DEFINITION
<b>fair trade certificate</b>	One of the most widely used trademarks for fair or ethical trade. The trademark was created to distribute the benefits of world trade between industrialised and developing countries on the basis of economic, social and environmental criteria. It can be applied to products where the financial security of producers has been guaranteed and environmental conditions have been taken into account. It was initially used mainly for chocolate, cocoa and coffee, but nowadays, fair trade labels are also applied for bananas, oranges, and even flowers and clothes.
<b>food mile/kilometre</b>	The distance a product travels from where it is grown and produced to the consumer's table.
<b>FSC certification</b>	The abbreviation stands for Forest Stewardship Council, which certifies that the product comes from responsibly managed forests. Based on a verified set of criteria, the certification attests that both the forest management and the manufacturing of the product have been carried out in an environmentally and socially responsible way. Among other things, the forestry and logging operations did not reduce biodiversity, did not damage basic ecological processes, and took into account the human rights of local people and the workers involved.
<b>full life-cycle assessment</b>	Full life cycle assessment means following the life cycle of products from production to waste. The main stages of the journey are: 1. manufacturing (including the production and sourcing of raw materials), 2. transport, 3. commercialisation, 4. delivery to the final consumer, 5. use, 6. re-entry into the circular economy, 7. final waste (overview of waste management options). The purpose of a life cycle assessment is to compare products from an environmental point of view (energy use, raw material requirements, damage to nature, etc.). Omitting an element of the life cycle may lead to a distorted analysis.
<b>globalisation</b>	The unification process – that intensified in the 20 <sup>th</sup> century and continues today – in the economic, financial, and cultural, etc. domains of the world, mainly through the spread of Western civilisation and the use of information and communication technologies. For example: the same products, brands, food, films, music, technologies and retail chains are available all over the world. The global market economy can undermine the autonomy of local societies and governments. The concept of globalisation was originally introduced into public thinking around the 1960s in the context of global environmental problems, indicating that local action has (can have) global effects. This was when the 'Think global, act local!' slogan was born.
<b>green investment</b>	An investment that directly or indirectly benefits the natural environment. Green investments target projects that focus on the conservation and restoration of natural resources, the creation of alternative renewable energy sources, the cleanliness and purification of water and air, and other activities with an environmental focus.
<b>green profession/ green jobs</b>	Green professions are occupations or jobs that contribute directly or indirectly to restoring the natural environment and/or to preserving the quality of the environment.
<b>greenfield investment</b>	The establishment of, or investment in, a new industrial enterprise on land that was previously under agricultural cultivation. The site is created entirely new without any architectural or operational history. By contrast, a brownfield investment reuses former buildings (typically in a dilapidated state) or demolishes them and reuses the site, using the previous infrastructure. Brownfield investments do not occupy new valuable productive land, but are typically more expensive than greenfield investments due to the costs of recultivation, or possibly heritage protection or building restoration expenses.

TERM	DEFINITION
<b>greenhouse effect</b>	The greenhouse gases present in the atmosphere (water vapour, carbon dioxide, methane, nitrous oxide) prevent radiation from the Sun that warms the Earth's surface from being reflected back into space. It becomes "trapped" in the atmosphere, causing the Earth's atmosphere to warm up.
<b>greenhouse gas</b>	Greenhouse gases are gases that let solar radiation pass through, but they only release back into space a small fraction of the infrared rays reflected from the Earth's surface because of warming, the majority are reflected or re-radiated back into the atmosphere, leading to the greenhouse effect. The gases under this collective heading are mainly water vapour, carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O) and other hydrocarbons, as well as several gases of lower concentrations which therefore are not relevant in the creation of the greenhouse effect.
<b>grey energy</b>	Grey energy refers to the energy used or required in the production, transport, maintenance or disposal of a building, product or service. This type of energy is not indicated by measuring instruments when the product is used, nor is it indicated on energy labels, even though it is important from an environmental point of view. In the case of a building, at least 20-50% of the total energy used to operate the building over its 50-year lifetime is grey energy.
<b>grey water</b>	Wastewater generated in plumbing units that cannot be consumed but can be recycled for other purposes. For example, water used by a washing machine or in a shower may be used to flush the toilet.
<b>home office</b>	A term for working from home. It became widespread in Hungary in 2020 because of the restrictive measures introduced during the pandemic.
<b>hydrogenated vegetable oil</b>	A type of oil treated by a chemical process in which the compounds making up the vegetable oils are modified to solidify into a fat-like state. Hydrogenation produces unsaturated fats, called trans fats, which can be harmful to health.
<b>invasive alien species</b>	Aggressively expanding non-native invasive species of plants and animals in a given community, which, by multiplying and spreading, threaten the balance of the native flora and fauna, destroying elements of the local biosphere that are unable to defend themselves or compete. After habitat destruction, these species pose the second greatest threat to biodiversity and the extinction of species. Only about 10-15% of the 12,000 or so alien species in Europe are invasive.
<b>local ecosystem</b>	Also known as local biocenosis. For example, a biocenosis of forests and the organisms that live in them around a residential area.
<b>mass tourism</b>	Mass tourism is a form of tourism where the tour operator seeks to make a profit primarily by increasing the number of tourists. Mass tourism places a heavy burden on the environment via outbound travel, overuse of local resources, and waste generation, and may also impair the quality of life of local residents.
<b>microplastics</b>	Plastic particles smaller than 5 millimetres, which are almost ubiquitous in the environment, soil, flowing water and oceans. These can come directly as microplastics from cosmetics and impregnating agents, or can form through abrasion, for example from car tyres or from the fragmentation of larger plastics (bottles, bags).
<b>mulch</b>	A layer of soil-covering material that protects the soil from drying out and inhibits the growth of weeds in the crop. By using natural mulch (sawdust, grass clippings, shredded bark, etc.), the nutrient content of the soil can also be increased.
<b>nomophobia</b>	The term comes from the expression "no mobile phobia". It refers to the fear of any situation where, for various reasons – lack of signal, battery power, etc. – a mobile phone cannot be used.

TERM	DEFINITION
<b>organic cotton or bio-cotton</b>	Cotton grown in a certain way, or produced using materials and processes, which aim to minimise its environmental impact. (For example: no chemicals are used, or just environmentally friendly chemicals, rainwater irrigation is applied).
<b>Pannonian grasslands</b>	The name given to vegetation closely related to the Pannonian region, dominated by grasses, with a diverse species composition typical of the Pannonian region.
<b>passenger mile/kilometre</b>	A measure of passenger transport performance. One passenger mile/kilometre is equal to the transport of one passenger per one mile/kilometre.
<b>passive house</b>	A rating system applied to buildings. A building is passive because it consumes almost no energy. There is no need for active heating or cooling, as the house can provide a comfortable thermal environment without these. To this end, heat loss is kept very low while internal heat from the heat dissipation of people and various machines and equipment is utilised. The house is well insulated (structure, building engineering, doors and windows, etc.), renewable energy is used where possible (solar, geothermal, etc.) and a ventilation-heat exchange system is installed in which the heat from the exhaust air is transferred to the fresh air coming in.
<b>planned obsolescence</b>	Deliberate reduction of the life cycle of products to encourage purchasing. Mainly, but not exclusively, typical of the electrical and electronics (E+E) industry. For example, a phone breaks down or its services slow down after a while.
<b>recultivation</b>	Recultivation is the restoration of a degraded natural area (e.g. due to mining, landfilling, soil contamination) to a condition close to its original state.
<b>responsible tourism</b>	In other words, gentle or sustainable tourism. A type of tourism where everyone (including tourists, accommodation providers, governments, NGOs, etc.) strives to preserve local environmental and cultural values by minimising the negative environmental, social and economic impacts of tourism. Another goal is to achieve positive changes by building on relationships with local communities (buying local products, respecting local customs, etc.).
<b>smart city, smart town, smart settlement</b>	A complex direction in urban development that focuses on the well-being of the people living in it, aided by "smart technology". A smartly designed settlement (use of resources, emissions, lighting and traffic management optimised with digital tools, green spaces, community areas and services serving the well-being of inhabitants, taking environmental concerns into account too) is also a sustainable settlement.
<b>soil degradation</b>	The degradation or quantitative loss of soil as a basic resource that can be renewed under appropriate conditions. Soil degradation, or soil loss, is a complex process. It may occur naturally, or as a result of human intervention. It may be caused by changes in vegetation cover, reduced biodiversity, landslides, floods, inland inundations, wind erosion, compaction, structural degradation, pollution, organic matter loss, change in land use, desertification.
<b>sustainable development</b>	In 1987, the United Nations defined sustainable development in the report 'Our Common Future' as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. In 2015, UN member states adopted the Sustainable Development Goals (SDGs), which provide an interconnected framework to guide all aspects of life, in all areas of the world.
<b>sustainable settlement (or eco-city)</b>	A settlement that prepares and implements its plans and strategies in accordance with the principles of sustainable development. It builds its operations on, among other things, renewable energy, increased green surfaces, recycling, composting, emission reduction, smart public transport as well as other innovative and sustainable technologies. It plans and shapes the future of the settlement together with the population and with the broad involvement of stakeholders and interested parties.

TERM	DEFINITION
<b>systems thinking</b>	An approach that focuses on the context and the wider implications of particular decisions before intervening in the functioning of a system. One of the methods used in this approach is system dynamics, a computer-aided analysis method that examines systems by analysing the properties of the elements, their relationships, their interactions and ways they change over time. It can be used to model possible scenarios, identify the causes of problems, and it thus helps to find and modify solutions.
<b>upcycling</b>	During upcycling, the material retains its character. For example: recycling glass or making cardboard furniture from waste paper.
<b>urban growth</b>	The increase in the number of towns and cities and the number of people living in them.
<b>urbanisation</b>	1. The formation (and development), densification and growth of human settlements. 2. The development in settlements' access to resources and their degree of organisation, changes in the way of life of their inhabitants, their transformation into an urban settlement.
<b>vintage</b>	A generic term for a style of clothing or accessories derived from or reminiscent of the prevailing fashion of the 1920s to the 1960s.
<b>volunteering</b>	Work undertaken out of commitment for the common good, without financial reward.
<b>water footprint</b>	The amount of water required to produce a product or carry out an activity, or for one's daily activities.
<b>zero waste</b>	A movement originating from the United States, whose followers do not aim for total zero waste (which is practically impossible to achieve), but to minimise the waste they produce. This means their primary focus is on preventing waste, but if this is not possible, they only buy products that can be reused more than once or recycled through separate collection of waste.

## BIBLIOGRAPHY

### In Hungarian

"Hódítók" – az idegenhonos inváziós fajok ["Invaders" - alien invasive species].  
<http://www.hermandointezet.hu/vvk-001> (Last accessed: July 2020).  
A gyapot [Cotton].  
<https://tudasbazis.sulinet.hu/hu/szakkepzes/konnyuipar/ruha-es-textilipari-szakmai-ismeret/a-pamut-es-len-elofordulasa/a-gyapot> (Last accessed: July 2020).  
Smith, A. (2015). U.S. Smartphone Use in 2015.  
<https://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/> (Last accessed: July 2020).  
Bagyinka, F., et al (2018), Ha a kör bezárul – a körforgásos gazdaság jelentősége és lehetőségei. [When the circle closes - the importance and opportunities of the circular economy].  
<https://www.pwc.com/hu/kiadvanyok/assets/pdf/korforgasos.pdf> (Last accessed: October 2020).  
Bíró, M. - Molnár, Zs. (2011). Milyen természetes a környezetünk? Terepi Adatlap a MÉTA Természetesség-mérőjéhez [How natural is our environment? Field Data Sheet for the MÉTA Naturalness Measurement].  
<https://www.okologia.mta.hu/node/2732> (Last accessed: July 2020).  
BISEL gumicsizmas természetvédelem [BISEL. Nature conservation in welly boots].  
<https://bisel.hu/> (Last accessed: July 2020).  
Doró, V. (ed.) (2016). A hulladék új élete – Ökodizajn Magyarországon, ReCity [The New Life of Waste – Ecodesign in Hungary, ReCity].  
<https://recity.hu/letoltheto-okodizajn-konyv/> (Last accessed: July 2020).  
Fogarassy, Cs., Dr. (2012). Karbongazdaság. [Carbon economy]. Budapest, L'Harmattan Kiadó.  
Hajnal, K., Dr., Hársas P. (undated). A felelős turizmus elméleti kérdései és gyakorlati példája [Theoretical issues and practical examples of responsible tourism].  
<http://balkancenter.ttk.pte.hu/tarsadalom/letoltes/Kodolanyi.htm> (Last accessed: July 2020).  
Duray, B. (2016). Fenntartható turizmus, felelős vidékfejlesztés [Sustainable tourism, responsible rural development].  
<https://www.researchgate.net/publication/322887921> (Last accessed: July 2020).  
Európa Pont (2019). Körforgásos gazdaság a gyakorlatban: a finn példa [Circular economy in practice: the Finnish example].  
[https://europapont.blog.hu/2019/11/17/korforgasos\\_gazdasag\\_a\\_gyakorlatban\\_a\\_finn\\_pelda](https://europapont.blog.hu/2019/11/17/korforgasos_gazdasag_a_gyakorlatban_a_finn_pelda) (Last accessed: July 2020).  
Európa Pont (2019). Körforgásos gazdaság a gyakorlatban: a svéd példa [Circular economy in practice: the Swedish example].  
[https://europapont.blog.hu/2019/12/05/korforgasos\\_gazdasag\\_sved\\_pelda](https://europapont.blog.hu/2019/12/05/korforgasos_gazdasag_sved_pelda) (Last accessed: July 2020).  
European Youth Portal. European Solidarity Corps. Közösségek támogatása Európa-szerte [Supporting communities across Europe].  
[https://europa.eu/youth/solidarity\\_hu](https://europa.eu/youth/solidarity_hu) (Last accessed: July 2020).  
Felelőtlen fogyasztást gerjesztő reklámok [Adverts triggering irresponsible consumption].  
<https://greenfo.hu/hir/felelotlen-fogyasztast-gerjeszto-reklamok/> (Last accessed: July 2020).  
Fenntarthatósági térkép. Helyi környezeti és kulturális örökségünk a múltban és most [Sustainable map. Our local environmental and cultural heritage, past and present].  
[http://letoltes.pontvelem.hu/fth2018/6\\_fth\\_fenntarthatosagi\\_terkep\\_oravazlat.pdf](http://letoltes.pontvelem.hu/fth2018/6_fth_fenntarthatosagi_terkep_oravazlat.pdf).  
Hankiss, E. (2017). Társadalmi csapdák [Social traps]. Budapest, Helikon.  
Happ, É. (2014). Fenntartható turizmus és felelősségvállalás [Sustainable tourism and responsibility].  
[http://real.mtak.hu/36406/1/GT\\_2014\\_1\\_07\\_Happ.pdf](http://real.mtak.hu/36406/1/GT_2014_1_07_Happ.pdf). (Last accessed: July 2020).  
Így gyilkolod a bolygót kényszeres ruhavásárlással [How you're killing the planet with your compulsive clothes shopping].  
<https://greenfo.hu/hir/igy-gyilkolod-a-bolygot-kenyszeres-ruhavasarlással/> (Last accessed: July 2020).  
Johnson, B. (2018). Zero Waste otthon [Zero waste at home]. Budapest, Tercium Kiadó.  
Kerékpárosklub Kisokos [Cycling Club Guide]  
<https://www.kerekparosklub.hu/kisokos> (Last accessed: July 2020).  
Körkörös gazdaság: mit jelent, miért fontos és mi a haszna? [Circular economy: what is it, why is it important, and what are the benefits?].  
<https://www.europarl.europa.eu/news/hu/headlines/economy/20151201ST005603/korkoros-gazdasag-mit-jelent-miert-fontos-es-mi-a-haszna> (Last accessed: June 2020).  
Hungarian Central Statistical Office (2016). Az önkéntes munka jellemzői [Characteristics of voluntary work].  
<https://www.ksh.hu/docs/hun/xftp/idoszaki/pdf/onkentes.pdf> (Last accessed: July 2020).  
Kriston, L. (2018). A nagy divatmárkák is áttérnek a körforgásos üzleti modellre [Big fashion brands are also moving to a circular business model].  
<https://piacesprofit.hu/klimablog/a-nagy-divatmarkak-is-attalnak-a-korforgasos-uzleti-modellre/> (Last accessed: June 2020).  
Kump, E., Rikter, I. (undated). 30 napos hulladékmentes kihívás [30-day waste-free challenge].  
[https://hulladekmentes.hu/30-napos-hulladekmentes\\_kihivas/](https://hulladekmentes.hu/30-napos-hulladekmentes_kihivas/) (Last accessed: July 2020).  
Le nettoyage des plages: transcription  
[http://fr.ver-taal.com/jt\\_20190803\\_nettoyageplages\\_transcription.htm](http://fr.ver-taal.com/jt_20190803_nettoyageplages_transcription.htm) (Last accessed: July 2020).  
Mai Manó House (2019). 75 éve született Sebastiao Salgado, korunk egyik leghíresebb fotográfusa [Sebastiao Salgado, one of the most famous photographers of our time, was born 75 years ago].  
[https://mamanohaz.blog.hu/2019/02/08/75\\_eve\\_szulett\\_sebasti\\_o\\_salgado](https://mamanohaz.blog.hu/2019/02/08/75_eve_szulett_sebasti_o_salgado) (Last accessed: July 2020).  
Meadows, D. et al (2005). A növekedés határai – harminc év után [The limits of growth – thirty years on]. Budapest, Kossuth Kiadó.  
Mobiltelefonok [Mobile phones] (2016). In Endródiné Benkő, E. (tip.): Minden napra kisebb (öko)lábnyom [A smaller (eco)footprint every day].  
[http://sustainableproject.net/wp-content/uploads/2016/05/1fejezet\\_Mindennapi\\_szemetunk\\_PL.pdf](http://sustainableproject.net/wp-content/uploads/2016/05/1fejezet_Mindennapi_szemetunk_PL.pdf) (Last accessed: July 2020).  
Módszer-tár. A SWOT-analízis [Methodology. A SWOT analysis].  
<https://hirmagazin.sulinet.hu/hu/pedagogia/modszer-tar-a-swot-analizis> (Last accessed: July 2020).  
Molnár, O., Halpern, B. (2013). Idegenhonos kétélű- és hüllőfajok [Non-native amphibian and reptile species].  
<https://www.mme.hu/khvsz/idegenhonos-keteltu-es-hullofajok> (Last accessed: July 2020).  
Nomophobia Questionnaire  
<https://www.psytoolkit.org/survey-library/nmp-q.html> (Last accessed: July 2020).  
Parányi plasztiktalány [Micro Plastic Puzzle].  
<https://mikromuanyag.hu> (Last accessed: July 2020).  
Passzold vissza, Tesó! [The Forest is Calling!].  
<https://www.janegoodall.hu/mobilkampany.html> (Last accessed: July 2020).

PET kupa [PLASTIC Cup].

[www.petkupa.hu](http://www.petkupa.hu) (Last accessed: July 2020).  
Kovács, Z., Prof. dr. – Vida, Gy. (2019). Urbanizáció [Urbanisation].  
[http://eta.bibl.u-szeged.hu/2090/1/EFOP343%20AP2%20Kov%C3%A1cs%2C%20Vida%2C%20Gy.%202019%20tananyagfejleszt%C3%A9s%20100%25%20jav%C3%ADtott\\_v%C3%A9gleges.pdf](http://eta.bibl.u-szeged.hu/2090/1/EFOP343%20AP2%20Kov%C3%A1cs%2C%20Vida%2C%20Gy.%202019%20tananyagfejleszt%C3%A9s%20100%25%20jav%C3%ADtott_v%C3%A9gleges.pdf) (Last accessed: July 2020).  
Ruhacímke kisokos [Clothes label guide].  
<https://www.onlinemarkaboltok.hu/blog/ruhacimke-kisokos> (Last accessed: July 2020).  
Sebestyén, É. (2012). Mérgező farmerek [Toxic jeans].  
<https://tudatosvasarlo.hu/mergezo-farmerek/> (Last accessed: July 2020).  
SMART Goals  
<https://www.mindtools.com/pages/article/newstool101-smart-goals.htm> (Last accessed: July 2020).  
Sweeney, L. B. – Meadows, D. (2015). Rendszergondolkodás játékosan [Systems thinking through play]. SOL Institution. Budapest.  
SWOT-analízis készítése [Preparing SWOT analyses].  
<https://tudasbazis.sulinet.hu/hu/szakkepzes/mezogazdasag/gazdalkodasi-ismeretek/swot-analizis-keszites/swot-analizis-keszites> (Last accessed: July 2020).  
Szaktudás Kiadó Ház Zrt. (2010) Talajdegradációs folyamatok [Soil degradation processes].  
[https://regi.tankonyvtar.hu/hu/tartalom/tamop425/0032\\_kornyezetvedelem/ch20s04.html](https://regi.tankonyvtar.hu/hu/tartalom/tamop425/0032_kornyezetvedelem/ch20s04.html) (Last accessed: July 2020).  
Tóth, F. (2020). Figyelemzavarhoz vezethet gyerekkorban a túl sok telefonnyomkodás – Mikortól engedjük a képernyőnézést? [Can too much phone use in childhood lead to attention deficit disorder - When should we start letting them watch a screen?].  
<https://wmn.hu/wmn-life/52117-figyelemzavarhoz-vezethet-gyerekkorban-a-tul-sok-telefonnyomkodas---mikortol-engedjuk-a-kepernyonezest> (Last accessed: November 2020).  
TrashOut használati útmutató PET kalóznak [TrashOut user's guide for PET pirates].  
[https://petkupa.hu/hu\\_HU/trashout-hasznalati-utmutato-pet-kalozoknak](https://petkupa.hu/hu_HU/trashout-hasznalati-utmutato-pet-kalozoknak) (Last accessed: July 2020).  
Tudatos vásárló 12 pontja [12 points of a conscious shopper].  
<https://tudatosvasarlo.hu/regi12pont/> (Last accessed: July 2020).  
Wackernagel, M. - Rees, W. E. (2001) Ökológiai lábnyomunk. Hogyan mérsékeljük az ember hatását a Földön? [Our ecological footprint. How to reduce human impact on Earth?]. Föld Napja Foundation. Budapest  
Zlinszky, J. – Balogh, D. (ed.) (2016) Világunk átalakítása: a fenntartható fejlődés 2030-ig megvalósítandó programja. [Transforming our world: sustainable development agenda to be implemented by 2030]. Pázmány Péter Catholic University, Faculty of Law and Political Sciences, Budapest.  
[https://jak.ppke.hu/uploads/collection/546/file/Vilagunk\\_atalakitasa.pdf](https://jak.ppke.hu/uploads/collection/546/file/Vilagunk_atalakitasa.pdf) (Last accessed: July 2020).  
Zöld minősítések tudástár [Knowledge Base for Green Certifications].  
<https://www.hugbc.hu/zold-minositesekek-tudastar> (Last accessed: July 2020).

### In English

17+ tips for responsible tourism.  
<https://brainybackpackers.com/responsible-tourism/> (Last accessed: July 2020).  
Della Costa, Ch. (2017). 7 Tricks Advertisers Use to Manipulate You Into Spending More Money.  
<https://www.cheatsheet.com/money-career/7-advertising-tricks-you-should-stop-falling-for.html/> (Last accessed: July 2020).  
Feyertag, J., et al (2018). 10 things to know about the impacts of urbanisation.  
<https://www.odi.org/publications/11218-10-things-know-about-impacts-urbanisation> (Last accessed: July 2020).  
Schleifer, J. J., MD (w. y.) Time to Screen Screen-Time.  
<https://www.lifespan.org/lifespan-living/time-screen-screen-time> (Last accessed: November 2020).  
Pandika, M. (2016). The Unexpected Effects of All That Screen Time.  
<https://www.rallyhealth.com/health/unexpected-effects-screen-time> (Last accessed: November 2020).  
OECD (2020). Cities in the World, A New Perspective on Urbanisation.  
<https://www.oecd.org/publications/cities-in-the-world-d0efcbda-en.htm> (Last accessed: July 2020).  
Conceição, P. dir. (2019). Human Development Report 2019. Beyond income, beyond averages, beyond today: Inequalities in human development in the 21<sup>st</sup> century.  
<http://hdr.undp.org/sites/default/files/hdr2019.pdf> (Last accessed: November 2020).  
Ritchie, H. – Roser, M. (2018). Urbanization.  
<https://ourworldindata.org/urbanization> (Last accessed: July 2020).  
The 10 Healthiest Cuisines In The World.  
<https://theculturetrip.com/africa/chad/articles/the-10-healthiest-national-cuisines-in-the-world/> (Last accessed: November 2020).  
United Nations (2019). World Urbanization Prospects.  
<https://population.un.org/wpp/> (Last accessed: July 2020).

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