

**АНГЛІЙСЬКА МОВА  
ДЛЯ СТУДЕНТІВ-ЕКОЛОГІВ  
ЧАСТИНА 2**



Міністерство освіти і науки України  
Вінницький національний технічний університет

**Англійська мова  
для студентів-екологів**

**Частина 2**

Електронний навчальний посібник  
комбінованого (локального та мережного) використання

Вінниця  
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Посібник охоплює матеріали практичного курсу з дисципліни «Іноземна мова (за професійним спрямуванням)» для студентів, що навчаються за спеціальністю 101 – Екологія, 183 – Технології захисту навколишнього середовища денної та заочної форм навчання.

Посібник складається з дванадцяти розділів, містить тексти професійного спрямування, завдання на розуміння тексту та лексико-граматичний навчальний матеріал. Посібник відповідає програмі курсу з англійської мови, яка вивчається у технічних ЗВО, з урахуванням досвіду викладачів кафедри іноземних мов. В посібнику запропоновано вправи різного рівня складності, призначені як для роботи з викладачем, так і для самостійної роботи студентів, що вивчають екологію, екологічну безпеку та моніторинг довкілля, технології захисту навколишнього середовища.

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## UNIT 1 CLIMATE CHANGE



### *Exercise 1.*

*Read and discuss the following questions.*

1. Which is the greatest problem we face while talking about climate?
2. What causes climate change?
3. What problems are caused by climate change?
4. Which actions can protect the environment from warming?
5. Should we be worried about climate change? Are you worried about climate change?
6. Can you affect the climate change?
7. Do you think climate change can be stopped? What should be done? What can we do to prevent it?

### *Exercise 2.*

*Learn the vocabulary.*

affect – впливати

CO<sub>2</sub> – вуглекислий газ

decade [ˈdekeɪd] – десятиліття

deforestation – вирубування лісів

depletion [diˈpliːʃ(ə)n] – виснаження, вичерпування

droughts [draʊt] – посуха

effect – вплив

eruption – виверження

flooding – паводок, затоплення

fossil fuel [ˈfɒs(ə)l ˈfju(:)əl] – викопне паливо

glacier [ˌgleɪʃie] – льодовик

greenhouse effect – парниковий ефект

impact [ˈɪmpækt] – вплив

phenomenon [fi'namə,nan] – явище  
tectonic plate – тектонічна плита  
vary ['veə.ri] – варіювати

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

## **Climate Change, Reasons and Effects**

Climate change can be defined as a natural process where temperature, rainfall, wind and other elements vary over decades or more. In millions of years, our world has been warmer and colder than it is now. During the last century, we started noticing the climatic change and its effect on human life. We started researching on climate change and came to know that the earth temperature is rising due to a phenomenon called the greenhouse effect. The warming up of earth surface causes many ozone depletion, affect our agriculture, water supply, transportation and several other problems.

Many people think climate change mainly means warmer temperatures. But it is not true. Because the Earth is a system, where everything is connected, changes in one area can influence changes in all others. The consequences of climate change now include, among others, intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms and declining biodiversity.

### ***Natural Reasons***

Natural Reasons of climate change include volcanic eruption, solar radiation, tectonic plate movement, orbital variations. Due to these activities, the geographical condition of an area becomes quite harmful for life to survive. Also, these activities raise the temperature of the earth to a great extent causing an imbalance in nature.



### ***Human Reasons***

Human Reasons mean Man's need and greed connected with many activities that not only harm the environment but himself too. Many plant and animal species go extinct due to human activity. Human activities that harm the climate include deforestation, using fossil fuel, industrial waste, different types of pollution and many more. All these things damage the climate and ecosystem very badly.

### ***Effects of Climatic Change***

These climatic changes have a negative impact on the environment. Apart from that, it is calculated that if this change keeps on going then many species of

plants and animals will get extinct. And there will be a heavy loss to the environment.

People are experiencing climate change in different ways. It affects our health, ability to grow food, housing, safety and work. The ocean level is rising, glaciers are melting, CO<sub>2</sub> in the air is increasing, forest and wildlife are declining, and water life is also getting disturbed due to climatic changes.



Adapting to climate consequences protects people, homes, businesses, livelihoods, infrastructure and natural ecosystems. If we do not do anything and things continue to go on like right now then a day in

future will come when humans will become extinct from the surface of the earth.

Although human mistake has caused great damage to the climate and ecosystem, it is still not late to start contributing to the environment. Climate action requires significant financial investments by governments and businesses, but climate inaction is vastly more expensive.

#### ***Exercise 4.***

***Answer the following questions.***

1. Do you think climate change is synonymous with global warming? Explain your answer.
2. How can one define climate change?
3. What causes climate change?
4. Is climate change natural or not? Explain your answer.
5. Does climate change happen gradually or quickly? Explain your answer.
6. What do human activities that harm the climate include?
7. What are the effects of climate change for people?
8. What could happen if the climate changes?
9. What is being done around the world?
10. How has the climate changed in your region over the last decade?
11. What can we do about climate change?
12. Whose financial investments could save the climate change problems?

#### ***Exercise 5.***

***Read the following text about greenhouse gases and fill in the proper forms of adjectives given in brackets.***

When we throw our garbage away, the garbage goes to landfills. Landfills are those 1) ..... (big) hills that you go by on an expressway that stink. They are full of garbage. The garbage is then sometimes burnt. This sends an 2) .....

(enormous) amount of greenhouse gases into the air and makes global warming 3) ..... (bad).

Another thing that makes global warming 4) ..... (bad) is when people cut down trees. Trees and other plants collect carbon dioxide (CO<sub>2</sub>), which is a greenhouse gas. Carbon dioxide is the air that our body lets out when we breathe. With 5) ..... (few) trees, it is 6) ..... (hard) for people to breathe because there is 7) ..... (much) CO<sub>2</sub> in the air, and we don't breathe CO<sub>2</sub>, we breathe oxygen. Plants collect the CO<sub>2</sub> that we breathe out, and they give back oxygen that we breathe in.

With 8) ..... (little) trees and other plants, such as algae, there is 9) ..... (little) air for us, and 10) ..... (many) greenhouse gases are sent into the air. This means that it is very important to protect our trees to stop the greenhouse effect, and also so we can breathe and live.

This gas, CO<sub>2</sub>, collects light and heat (or radiant energy), produced by the sun, and this makes the earth 11) ..... (warm). 12) ..... (little) greenhouse gases will rise into the air, global warming will slow down.

### ***Exercise 6.***

***Fill in the gaps using the following words in the word-box.***

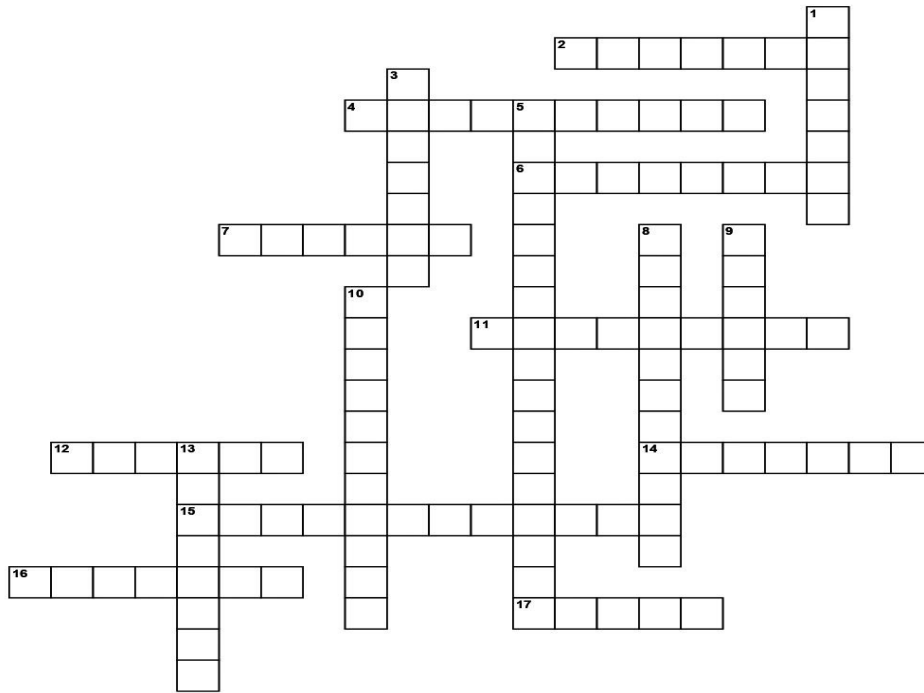
*Impact, precipitation, ecosystem, natural, footprint, emissions, greenhouse, unusual, endangered, fossil.*

1. If an animal is ....., it is threatened with extinction.
2. A natural community that supports a variety of plant and animal life is known as an .....
3. Carbon dioxide, methane, and nitrous oxide are examples of ..... gases.
4. Oil and coal are examples of ..... fuels.
5. Snow, rain, and hail are examples of .....
6. People concerned about climate change try to minimize their carbon .....
7. Greenhouse gases released into the atmosphere are referred to as .....
8. The ..... on the environment has been significant.
9. Climate change manifests itself not only as global warming, but also as extreme and ..... weather.
10. "Man-made" is the opposite of .....

### ***Exercise 7.***

***Print the crossword. Use the information below and solve the crossword puzzle.***





**Across:**

- 2) opposed or resisting
- 4) a unit of measurement where at 0 and 100 is the freezing and boiling point of water
- 6) a device used to reduce waste matter
- 7) something that may cause injury or harm
- 11) movement of the people between regions, countries or continents
- 12) having or suffering from an illness or injury
- 14) element of the periodic table with order №16
- 15) drinking container for which additional money has to be paid in Germany so that they can be dispensed again
- 16) a state of waterlessness
- 17) load or unpleasant sound

**Down:**

- 1) a way to reuse materials
- 3) reset to a previous state
- 5) the widespread development of factories in a region, country, culture
- 8) the smallest planetary system we live in
- 9) to clean something contaminated or imperfect
- 10) a state in which contradictory powers are alike
- 13) watering areas with artificial means

**Exercise 8.**

*Watch the video about climate change suggested by the teacher and choose the proper answer to the given statements.*

1) According to the speaker, greenhouse gases are produced by .....

- a) heat from the sun
- b) the actions of people
- c) the sun's rays, and also the actions of people
- d) the video doesn't say

2) Which of these things is a greenhouse gas?

- a) carbon monoxide
- b) carbon dioxide

- c) oxygen
- d) the video doesn't say

3) *Which of these ways to generate power provides a clean source of energy?*

- a) gas
- b) oil
- c) wind power
- d) they are all clean sources of energy

4) *Which of these things can help reduce levels of carbon dioxide?*

- a) driving to work
- b) heating with coal instead of gas
- c) using public transport
- d) leaving your TV on, rather than switching it off

5) *Which of these predictions about climate change does the video make?*

- a) If the planet gets warmer, then polar bears will become extinct
- b) If the planet gets warmer, then we can expect more floods
- c) if the planet gets warmer, then fuel will become less expensive
- d) if the planet gets warmer, then sea levels will rise

6) *The word extinct means .....*?

- a) to become scarce or rare
- b) in need of protection
- c) to become endangered
- d) something that has died out, and no longer exists

7) *If the planet continues to heat up, \_\_\_ \_\_\_ \_\_\_ expect to experience more extreme weather.*

- a) then will we
- b) then can we
- c) then we can
- d) then should we

8) *Which of these things isn't mentioned in the video?*

- a) wave energy
- b) car pooling
- c) coral reefs
- d) heat waves

**Exercise 9.**

***Read and translate the following text into Ukrainian. Make up 12 different questions.***

## Young Ukrainians Are Uniting to Fight Climate Crisis

Today, young environmental activists from Ukraine are not only changing their home cities and communities for the better by teaching their fellow citizens how to sort waste or consume responsibly. They are also joining the international climate movement.



In 2021, with the support of UNICEF, young people from Ukraine took part in the UN Climate Conference (COP26) in Glasgow, UK. Crucially, their voices helped to shape the Global Youth Declaration – a document calling for change in sectors such as energy, agriculture, health, transport, water and sanitation, technology and innovation –

which should be taken into account when key decisions are made and official documents are signed at COP26.

Nina Rubakha, a 24-year-old student from Ukraine's Volyn region, has been personally affected by the global climate crisis. Last year, drought turned the top layer of her home town's soil into a dry cracked crust. A storm then lifted it into the air, creating thick dust clouds. Nina's grandmother, who had to clean the dirt from the windows of her house, said she had never seen such a thing in 65 years of her life.

When Nina was thinking of the large-scale environmental crisis, the constant rise in air temperature, droughts and terrible fires around the world, she felt powerless. Nina, researching climate change for her master's thesis at Ivan Franko National University, started looking for ways to change the situation locally and sought support to join the fight for the future of the planet at the international level.



Nina volunteered with the nongovernmental organization (NGO) Plato, which deals with climate issues in Lviv. She was working on a severe weather safety plan in Lviv and lecturing teenagers on responsible clothing consumption. But while working hard to improve the situation in Lviv, Nina knew there is much more to be done on a global level. The average temperature on the planet may rise by 2.7 degrees by the end of the century. This is our future. That is why climate change today affects everyone. Young environmental activists can solve this problem only by uniting in a single movement.

Nina felt inspired that UNICEF supports the participation of young people in COP26. It was UNICEF that heard the demands of Ukrainian youth and its quiet whisper of requests for environmental change, and that strengthened the

voice of youth like a powerful booster. That's why her personal demands on the environment no longer sounded like a single voice as she said.

At COP26, Nina Rubakha has been working hard to encourage the leaders of Ukraine and other countries to integrate climate education into academic curricula. At the conference, she was impressed by the experience of Poland. Polish activists have collected 60,000 signatures for a petition to bring climate issues to the school curricula in their country. This inspired her to continue working on the topic of environmental education and to take a more holistic approach to it. And sometime later, to create a petition – like in Poland – for climate education to develop in Ukraine.

(Adapted from <https://www.unicef.org/ukraine/en/stories/young-ukrainians-are-uniting-fight-climate-crisis>)

**Exercise 10.**

**Match the words from column A with their definitions from column B.**

<b>A</b>	<b>B</b>
1) distribution	a) a sudden and powerful effect that something has on something or somebody
2) pattern	b) produce and discharge (something, especially gas or radiation)
3) decade	c) reduction of the amount of something or the number of things
4) average	d) frequent changes in the amount, value or level of something
5) fluctuation	e) the normal or typical amount or quality for a particular group of things or people
6) impact	f) the action of sharing something out among a number of recipients
7) glaciation	g) not open to more than one interpretation
8) emit	h) the repeated or regular way in which something happens or is done
9) crust	i) something that is formed from the decayed remains of plants or animals
10) unambiguous	j) the process or state of being covered by glaciers or ice sheets
11) fossil fuel	k) the tough outer part of something
12) depletion	l) a period of ten years

***Exercise 11.***

***Read the following statements and fill in the gaps with the proper prepositions.***

1. The interstate pipeline system consists ..... pipelines that cross one or more states.

2. Carbon dioxide is responsible ..... causing the greenhouse effect.

3. Sunspots are concentrated ..... two belts, one south and one north of the solar equator.

4. Ultraviolet A rays from the sun can penetrate deep ..... your skin and damage collagen, which is the protein that holds your skin together in a firm and smooth way.

5. All the people are familiar ..... the effects of carbon dioxide on our environment.

6. The ecologists base their scientific conclusions ..... the conclusive evidence.

7. Some plants can draw upon groundwater supplies, most of them depend ..... seasonal rainfall.

8. This is coupled ..... changeability and uncertainty associated with new technologies.

9. Scientists can successfully convert carbon dioxide ..... some useful compound commercially using little energy.

10. Technologists can effectively deal ..... the ill effects of greenhouse while converting carbon dioxide.

11. Paul Ehrlich's contributions to immunology are highly suitable ..... modern use.

12. Ukraine contributes ..... the world economy by producing one-third of the world's sunflower oil.

***Exercise 12.***

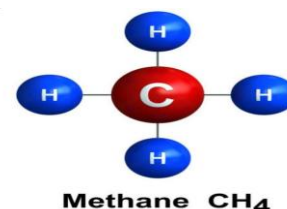
***Read and translate the following text into Ukrainian.***

**The Greenhouse Effect**

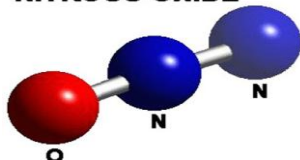
The greenhouse effect is one of several factors that affect the temperature of the Earth. It was discovered by Joseph Fourier in 1824, with the first reliable experiments conducted by John Tyndall in 1858 and reported for the first time quantitatively by Svante Arrhenius in 1896.

Greenhouse gases, which include water vapour, carbon dioxide and methane, warm the atmosphere by efficiently absorbing thermal infrared radiation emitted by the Earth surface, by the atmosphere itself and by clouds.

Methane is produced when vegetation is burnt, digested or rotted with no oxygen present. Garbage dumps, rice paddies, grazing cows and other livestock release lots of methane.



#### NITROUS OXIDE

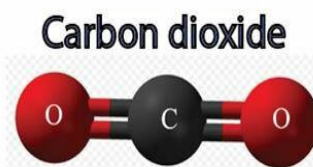


Nitrous oxide can be found naturally in the environment but human activities are increasing the amounts. Nitrous oxide is released when chemical fertilizers and manure are used in agriculture.

Halocarbons are a family of chemicals that include chlorofluorocarbons (CFCs), which also damage the ozone layer and other human-made chemicals that contain chlorine and fluorine.

The most poisonous and the abundantly released gas is carbon dioxide. Billions of tones of carbon dioxide are burnt into the atmosphere every year.

Carbon dioxide is the gas that is exhaled by everyone in this Earth and it has the properties to absorb infrared radiation, which is the heat radiated away from a warm object. The Earth cools off at night by radiating the heat back into the space, which it gets from the sun during the day, in the form of infrared radiation.



With carbon dioxide present in the air, it will absorb some of the radiation and limit its exit into space. The presence of increased carbon in the atmosphere has made the oceans more acidic, killing many sea creatures and endangering the general health of the oceans all over the world.

#### *Exercise 13.*

*Read the text “The Greenhouse Effect” in exercise 12 and decide whether the following statements are true (T) or false (F). Correct the false ones.*

1. Greenhouse gases warm the atmosphere by absorbing thermal infrared radiation emitted by the Earth surface.
2. Lots of methane is released with grazing cows.
3. Carbon dioxide is the most poisonous released gas.
4. The use of chemical fertilizers doesn't result in nitrous oxide releasing.
5. The presence of increased carbon in the atmosphere has created the general health of the oceans all over the world.
6. Halocarbons never damage the ozone layer.
7. Carbon dioxide has the properties to absorb infrared radiation.
8. The greenhouse effect doesn't affect the temperature of the Earth.
9. The first reliable experiments were conducted by Joseph Fourier.
10. Every year billions of tones of carbon dioxide are burnt into the lithosphere.
11. When vegetation is burnt methane is produced.
12. The heat is taken back into the space at night when the Earth cools off.

**Exercise 14.**

Read pre-listening information below. Follow the link <https://education.nationalgeographic.org/resource/gergana-daskalova-an-unexpected-eden> to watch the video. Make up a dialogue and introduce it with your partner.

National Geographic Explorer Gergana Daskalova is a global climate change ecologist from Bulgaria who is working to understand more about how ecosystems are changing and becoming resilient in the face of Climate Change. She urges everyone to do their part to build a more resilient future.

**Exercise 15.**

Read and complete the following sentences using the words from the word-box.

*Adapt, climate crisis, cut back, desertification, drought, extinct, flood, forest fire, fossil fuel, global warming, greenhouse gas, ice age, melt, pollution, sea level.*

1. A ..... is a long period of time without rainfall.
2. .... happens when the Earth's temperature begins to rise.
3. Too much sudden rainfall can cause .....s along rivers.
4. Island nations, such as Kiribati are very concerned about a rise in .....
5. Many animals are becoming .....
6. Carbon dioxide is a ..... that is responsible for much of the change in climate.
7. Cars and factories produce a lot of air .....
8. Coal, oil and gas are all examples of .....s.
9. Perhaps it is time for us to ..... on things such as fossil fuels, plastics and meat.
10. The ice caps at the North and South Poles are .....ing at an alarming rate.
11. Droughts can cause .....s which may also burn down homes and create lots of smoke.
12. Climate change is widely considered to be an urgent problem facing us all. It is a .....
13. A lack of water in some countries is causing deserts to become larger. This is known as .....
14. An ..... is the opposite of global warming.
15. Countries, people and animals must quickly learn to ..... to a changing world.

**Exercise 16.**

**Translate the following sentences into English.**

1. Зміна клімату може призводити до екстремальних погодних явищ, втрати біорізноманіття, підвищеного ризику для здоров'я та вимушеного переселення людей.

2. Кліматична криза – це надмірно стрімка зміна клімату через підвищення глобальної середньої температури.

3. Клімат природно мінливий і це пояснюється багатьма факторами, такими як зміни океанських течій, вулканічна активність, сонячна радіація.

4. Підвищується рівень моря через розширення води за більш високих температур і танення льодовиків.

5. Збільшується інтенсивність та частота екстремальних погодних умов, таких як урагани, повені, посухи та шторми.

6. Збільшення дефіциту води в деяких районах призводить до опустелювання та зниження врожайності.

7. Закислення океану знижує врожайність у рибній промисловості та руйнує коралові рифи.

8. Втрата середовища проживання через зміну клімату трапляється набагато швидше, ніж види можуть адаптуватися.

9. Збільшуються види захворюваності, особливо малярії та лихоманки денге, оскільки комарі здатні виживати на більших широтах і висотах.

10. Віддавайте перевагу місцям відпочинку, які знаходяться ближче до дому, куди вам не потрібно летіти.

11. Уникайте використання одноразових матеріалів і надавайте перевагу повторному використанню.

12. За змоги, користуйтеся громадським транспортом, каршерингом або велосипедом.



## UNIT 2 GLOBAL WARMING



### *Exercise 1.*

*Before reading the text about global warming let's discuss the following questions.*

1. Does ozone layer serve important protective functions for all forms of life?
2. What is ultraviolet radiation?
3. How can we stop the process of ozone depletion?
4. What are CFCs?
5. What is global warming?

### *Exercise 2.*

*Learn the vocabulary.*

available – наявний

building insulation – будівельна ізоляція

chlorofluorocarbons – хлорфторвуглеці

deteriorate – погіршуватись

food chain – харчовий ланцюг

harmful – шкідливий

immune system – імунна система

infectious diseases – інфекційні захворювання

ozone layer depletion – руйнування озонного шару

protective functions – захисні функції

ultraviolet radiation – ультрафіолетове випромінювання

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

## **Global Warming. Ozone Layer Depletion**

Our deteriorating environment is a global issue, but we feel the effects locally every day.

The quality of our air, water, and land is degenerating, and we threaten to bury ourselves in garbage. The number and complexity of environmental concerns are growing all the time, and sometimes it seems overwhelming. Before attempting to correct the problems, we need to break down the issue of environmental degradation into manageable parts.

Global warming, or an increase in average temperatures around the world, is caused by “greenhouse gases”, which are a result of burning coal and oil products, and the loss of trees through poor forestry practices.

Possible results of an increase in average temperatures of only 1.5 to 4.5°C include a rise in sea level with flooding of coastal cities and agricultural areas, a

change in rainfall patterns, northward movement of crop and forest boundaries, and warming of the oceans with unpredictable effects on marine life and fisheries.

About fifteen miles above the earth’s surface there is a paper-thin layer of ozone (a modified form of oxygen). This ozone layer serves important protective functions for all forms of life.

While scientists have been theorizing about this since the early 1970s, it was not until 1985 that firm evidence of ozone depletion became available. A few scientists found a way to actually measure ozone levels and discovered that atmospheric ozone over Antarctica was in decline.

Further inquiries revealed that the process of ozone depletion had been going on for some time and increasing steadily each year. In 1987 there was literally a hole in the ozone layer as big as the continental United States.

Why is the hole there? In 1930 researchers discovered a new group of chemical compounds chlorofluorocarbons, or CFCs which are widely used in refrigeration and air-conditioning units. foam products, such as building insulation and fast-food containers. They have been used in aerosol spray cans. The sales of CFCs in the United States amount to \$750 million each year, and they are used in products that have sales of many billions more. Some of CFCs properties present dangers. Products in which they are used release the CFCs into the air, whereupon they float up into the upper atmosphere. As more CFCs



are introduced into the environment, the process of ozone depletion continues.

The ozone layer is critical to maintain, for it shields life on earth from the damaging effects of ultraviolet radiation from the sun. This radiation, unless blocked, can do many things. It can disrupt the oceans food chains, upon which many forms of life (including human) depend.

As the ozone layer is depleted, the ultraviolet radiation will increase the incidence of skin cancers and cataracts of the eye. This radiation can damage our immune systems, leaving us helpless to fight off a variety of infectious diseases.

Construction materials, particularly plastics, will more quickly deteriorate. And damage to crops could be monumental.

Despite the significant progress, the damage continues. For example, as we discard unwanted refrigeration units, air conditioners, etc., the CFCs within will join those already in the atmosphere. And the depletion process cannot easily be reversed.

#### ***Exercise 4.***

***Answer the following questions.***

1. What are current problems of our deteriorating environment?
2. Is global warming caused by “greenhouse gases” which are a result of burning coal and oil products and the loss of trees through poor forestry practices?
3. What are possible results of an increase in average temperatures of only 1.5 to 4.5°C?
4. When did a firm evidence of ozone depletion become available?
5. What did further inquiries reveal?
6. When did researchers discover a new group of chemical compounds?
7. Where are CFCs widely used?
8. Why is the ozone layer critical to maintain?
9. Why does the process of ozone depletion continue?
10. What damage can radiation cause?
11. What properties of CFCs are dangerous to people’s health?
12. Can the depletion process easily be reversed?

#### ***Exercise 5.***

***Read and translate the following text and choose the best answer to the questions below.***

The world’s oceans have warmed 50 percent faster over the last 40 years than previously thought due to climate change, Australian and US climate researchers reported Wednesday. Higher ocean temperatures expand the volume of water, contributing to a rise in sea levels that is submerging small island nations and threatening to wreak havoc in low-lying, densely-populated delta regions around the globe.

The study, published in the British journal “Nature”, adds to a growing scientific chorus of warnings about the pace and consequences rising oceans. It also serves as a corrective to a massive report issued last year by the Nobel-winning UN Intergovernmental Panel on Climate Change (IPCC), according to the authors.

Rising sea levels are driven by two things: the thermal expansion of sea water, and additional water from melting sources of ice. Both processes are caused by global warming. The ice sheet that sits atop Greenland, for example, contains enough water to raise world ocean levels by seven metres (23 feet), which would bury sea-level cities from Dhaka to Shanghai.

Trying to figure out how much each of these factors contributes to rising sea levels is critically important to understanding climate change, and forecasting future temperature rises, scientists say. But up to now, there has been a perplexing gap between the projections of computer-based climate models, and the observations of scientists gathering data from the oceans.

The new study, led by Catia Domingues of the Centre for Australian Weather and Climate Research, is the first to reconcile the models with observed data. Using new techniques to assess ocean temperatures to a depth of 700 metres (2,300 feet) from 1961 to 2003, it shows that thermal warming contributed to a 0.53 millimetre-per-year rise in sea levels rather than the 0.32 mm rise reported by the IPCC.

*1. What happens when the ocean's temperature rises?*

- a) it causes sea levels to rise.
- b) it causes sea levels to remain constant.
- c) it causes sea levels to decrease.

*2. The rise in water levels is especially dangerous for small island nations and .....*

- a) low-lying urban areas.
- b) all coastal cities.
- c) people who live on the beach.

*3. The new study:*

- a) shows that thermal warming contributed to a 0.32 millimeter-per-year rise in sea levels.
- b) did not reveal anything that scientists didn't already know.
- c) used new techniques to assess ocean temperatures.

*4. Ultimately, the new study should help scientists to .....*

- a) lower water levels.
- b) better predict climate change.
- c) bury sea-level cities like Dhaka and Shanghai.

5. *What was the main finding of the study?*

- a) that not enough is being done about global warming.
- b) that ocean waters have warmed faster than scientists had previously thought.
- c) that the warming of the world's oceans is not a threat.

**Exercise 6.**

*Match the words from column A with their definitions from column B.*

A	B
1 costal	A storing or keeping as waste
2 rainfall pattern	B tanker wreckage
3 unpredictable	C worsening, something that becomes poorer
4 deplete	D exhaust, pour, throw out
5 damage	E quantity of rainfall
6 fertilizers	F spreading deserts, the movement of deserts
7 acid	G harm, destruction
8 emissions	H breathing difficulties
9 municipal sewage	I located on the coast or close to the shore
10 effluents	J cutting out woods, trees
11 discharge	K chemicals used in agriculture
12 accidental oil spills	L covering with a layer of water
13 runoff	M city wastes
14 logging	N something which we can't foresee or know beforehand
15 mining	O liquid wastes
16 dumping	P chemical compounds containing hydrogen
17 desertification	Q cutting out, felling trees
18 deteriorating	R reduce in amount, use up
19 flooding	S pouring, sewage
20 greenhouse	T a place with hot and damp conditions to grow plants
21 deforestation	U taking underground resources
22 respiratory problems	V exhaust fumes or gases, wastes

**Exercise 7.**

*Follow the link <https://climateatlas.ca/climate-change-basics> to watch the video about global warming . Make up a dialogue and introduce it with your partner.*

### *Exercise 8.*

*Read and translate the following text into Ukrainian. Make up 12 different questions.*

## **Global Warming Threatens Wildlife**

Recently a group of scientists published the first comprehensive study into the effect of higher temperatures on the natural world.

The scientists involved in the research were shocked by what they found. Over the next 50 years about 25% of land animals and plants will become extinct. More than 1 million species will be lost by 2050.



The head of the research team, Chris Thomas, who is professor of conservation biology at Leeds University, described the results of the research as «terrifying». The loss represents more than

10 % of all plants and animals and a large part of this is already irreversible because of the extra global warming gases that are already in the atmosphere. But the scientists say that immediate action to control greenhouse gases now could save many more plants and animals from extinction.

The research took two years to complete and provides an assessment of the effect of climate change on six biologically rich regions of the world taking in 20 % of the land surface. The research in Europe, Australia, Central and South America, and South Africa, showed that species living in mountainous areas had a better chance of survival because they could move uphill to get cooler.

One of the more shocking findings of the scientists was that half of the 24 species of butterfly they studied in Australia would become extinct. In South Africa, major conservation areas such as the Kruger National Park could lose up to 60% of the species under their protection, while more than one third of 300 South African plant species studied were expected to die out, including the national flower, the King Protea.

A study of 163 tree species in the Cerrado region of Brazil which covers one fifth of the country, showed that up to 70 would become extinct. Many of the plants and trees that exist in this savannah occur nowhere else in the world. In Europe, the continent least affected by climate change, survival rates were better.

Studies in Mexico's Chihuahuan desert confirmed that extinction was more probable on flatter land because a small change in climate would mean that plants and animals would have to migrate for huge distances in order to survive.

One third of the 1,870 species that were studied would be in trouble.

Many species are already certain to become extinct because it takes at least 25 years for the greenhouse effect – or the trapping of the sun's rays by the carbon dioxide, methane and nitrous oxide – to have its full effect on the planet. The continuing production of more greenhouse gases, particularly by the United States and European nations, is making matters worse. The research says that, if mankind continues to burn oil, coal and gas at the current rate, up to one third of all life forms will become extinct by 2050.

Chihuahuan desert [tʃə'wa:wə] – Чіауа, пустеля в Північній Америці  
the Cerrado region – Серрадо, екорегіон тропічної савани у Бразилії  
the King Protea – протей гігантська, королівська протей (рослина)  
the Kruger National Park – Національний парк Крюгер

### ***Exercise 9.***

***Answer the following questions.***

1. How many species are expected to be lost by the year 2050?
2. How much of the land surface of the world does the report on global warming cover?
3. How many species of butterfly did they study in Australia?
4. How many species of South African plants are expected to die out?
5. How many species were examined in Mexico?
6. How long does it take for the greenhouse effect to have its full effect on the planet?
6. Which gases cause the greenhouse effect?
7. Which human activities produce greenhouse gases?
8. What do studies in Mexico's Chihuahuan desert confirm?
9. What would a small change in climate mean?
10. Why are many species already certain to become extinct?
11. What is making matters worse?
12. What does the research say?

### ***Exercise 10.***

***Read the text again and find the proper words to the given definitions.***

1. A word which means a wrong idea that something is smaller or less important than it really is.
2. Another word for «size» or «extent».
3. A noun which means the process of working together with other people on a specific project.
4. A noun used to describe a large flat area of land covered with grass in a warm part of the world.
5. A two-word verb which means the same as «to become extinct».
6. An adjective which means «extremely large».

**Exercise 11.**

**Read the text “Global Warming Threatens Wildlife” in exercise 8 and decide whether the following statements are true (T) or false (F). Correct the false ones.**

1. Over the next 50 years about 10% of land animals and plants will become extinct.
2. More than 10% of all plants and animals and a large part of this is reversible because of the extra global warming gases that are already in the atmosphere.
3. Immediate action to control greenhouse gases now could save many more plants and animals from extinction.
4. The research took ten years to complete and provides an assessment of the effect of climate change on six biologically rich regions of the world taking in 20% of the land surface.
5. The research showed that species living in mountainous areas had a worse chance of survival.
6. Half of the 24 species of butterfly studied in Australia would become extinct.
7. Many of the plants and trees that exist in this savannah occur nowhere else in the world.
8. Studies in Mexico’s Chihuahuan desert confirmed that extinction was less probable on flatter land.
9. It takes at least 25 years for the greenhouse effect to have its full effect on the planet.
10. The continuing production of more greenhouse gases is making matters worse.

**Exercise 12.**

**Fill in the gaps using the words given in the word-box.**

*Extinct, conservation, startling, migration, irreversible, species, curb (verb), doomed.*

1. .... means “surprising” or “very unusual”.
2. An ..... condition or situation is one which is impossible to change or bring back.
3. If something is ..... it is certain to fail or to be destroyed.
4. An ..... animal or plant no longer exists.
5. If you ..... something, you limit or control it.
6. .... is the process by which land and water is managed to prevent it being destroyed or damaged.
7. .... is a plant or animal group whose members all have similar



general features.

8. .... is the process of moving to another part of the world.

**Exercise 13.**

**Read and translate the text, underline one sentence in each passage that conveys the main idea. Add some information about your personal environment-healthy choice.**

1. Cars and trucks are the world's biggest air polluters. But scientists are trying to invent car that pollute less. There already exist solar and electric cars. Farmers of some American states are trying a fuel in their tractors made from soy beans.

2. The greenhouse effect is caused by harmful gases known as greenhouse gases. These gases are produced when we burn fuels, especially in power station to make electricity. These gases go up into the earth atmosphere and stop heat from leaving the Earth.

3. When the ozone layer is damaged by CFCs (chlorofluorocarbons) harmful light from the sun reaches the Earth. It causes incurable diseases. As for the acid rains., they cause damage to trees, rivers and buildings. It results in destruction of habitat in the air water, on land. Many species of birds, fish and animals have become extinct.

4. Worldwide, the stinky problem of pollution, has grown. More and more factories add their bad breath to the air. Many world cities suffer from a brown layer of smog and bad breath. That makes people feel ill and have difficulty in breathing.

**Exercise 14.**

**Listen to the recording suggested by the teacher: five different people share their opinions about global warming. For questions 1-5, choose from the list (A-F) what they say about the problem. Use the letters only once. There is one extra letter which you do not need.**

- Speaker 1 .....
- Speaker 2 .....
- Speaker 3 .....
- Speaker 4 .....
- Speaker 5 .....

- A I am not sure the problem is caused by people.
- B There is not much ordinary people can do.
- C Most people do not know enough about it.
- D It is not as big a problem as people think.
- E I do what I can to help the situation.
- F I am not very hopeful about the future.

**Exercise 15.**

**Fill in the gaps using an appropriate preposition.**

1. A number of people were involved ..... the research.
2. The scientists hoped to come up ..... definite results.
3. Some areas risk losing up ..... 60% of their species.
4. Europe is the continent least affected ..... climate change.
5. A number of species are already destined ..... extinction.
6. It takes 25 years for the greenhouse effect to have its full effect .....  
the plants.
7. More than one .....10 .....all plants and animals may be lost.
8. Up to one third will become extinct ..... the year 2050.

**Exercise 16.**

**Choose the right answer to the given statements below.**

1. *Why is the loss of more than 10% of all plants and animals described as “irreversible”?*

- a) because it is impossible to prevent the greenhouse effect.
- b) because the gases that will kill these species have already been discharged into the atmosphere.
- c) because it took two years for the scientists to make their assessment.

2. *Why do species living in mountainous areas have a greater chance of survival?*

- a) because the air is cooler.
- b) because they can move to where the air is cooler.
- c) because there are fewer species in mountainous areas.

3. *What will happen to the national flower of South Africa?*

- a) it will be conserved in the Kruger National Park.
- b) it will be protected.
- c) it will become extinct.

4. *What is the greenhouse effect?*

- a) the continuous discharge of greenhouse gases.
- b) the trapping of the sun’s rays by greenhouse gases.
- c) the burning of oil, coal and gas.

**Exercise 17.**

**Before you read the following text look at the title and make predictions about what you expect the text to be about. Read and translate the text into Ukrainian.**

## It's Your World!

The Earth is a big place with big problems. You can't solve them alone, but there are things you can do to do help.



An old Chinese proverb says: "A journey of a thousand miles must begin with a single step." The way it is. If you do something to help and many others do the same, all the small steps can add up to a lot of forward movement.

Fifty years ago people concerned about the earth set up a day in its honor called Earth Day. It was a time to think about the fragile planet and what could be done to help it.

April 22 will mark the 53<sup>rd</sup> anniversary of Earth Day and the start of new week-long conservation effort called the National Celebration of the Outdoors. From April 22 to April 29, people all over the United States will try to make the outdoors greener, cleaner, and friendlier.

"This is a grass-roots movement on national issues", says Doug Wolf, project coordinator for the celebration. "We want to let people know that there are things they can do right at home."

Start now to plan your part in the celebration. Show these pages to your parents, your friends, your teachers, and your Scout or church group leaders. Ask them to help. Remember, it's your world!

### *Exercise 18.*

*Read and translate the following text. Write an essay about your personal experience in planting trees / flowers.*

### **Plant a Tree or Adopt One**

If you live in a city apartment and have no place for planting, you can still make a tremendous difference in the leaf life around you. Adopt a tree and care for it. City trees, especially, need help. An official in the nation's capital estimates that 3,000 of its 100,000 trees die every year. Here some things you can do for your adopted tree:

1. Spread two or three inches of mulch (wood chips, pine needles, leaves or grass clippings) above the roots. The mulch will help hold moisture in the soil.
2. Make a border of bricks or stones around of area.
3. Pick up any litter that collects under your tree.

4. Water your tree regularly. Young trees, those with trunks less than two inches across, need water every seven to ten days during not dry spells. Their roots don't go deep enough to reach water stored underground.

***Exercise 19.***

***Translate the following sentences into English.***

1. Озоновий шар виконує важливі захисні функції для всіх форм життя.

2. Приблизно в п'ятнадцяти милях над землею поверхнею є тонкий, як папір, шар озону.

3. Лише в 1985 році стали доступними переконливі докази руйнування озонового шару.

4. Кілька вчених знайшли спосіб фактично виміряти рівень озону та виявили, що рівень озону в атмосфері над Антарктидою спадає.

5. Подальше дослідження показало, що процес руйнування озонового шару тривав протягом певного часу і з кожним роком постійно зростає.

6. У 1930 році дослідники відкрили нову групу хімічних сполук-хлорфторвуглеці або CFC.

7. Фреони широко використовуються в холодильних установках і системах кондиціонування повітря, пінопластових продуктах, таких як будівельна ізоляція та контейнери для швидкого харчування.

8. Продукти, в яких CFC використовуються, вивільняють фреони в повітря, після чого вони піднімаються у верхні шари атмосфери.

9. Будівельні матеріали, особливо пластик, швидко псуються.

10. Шкода, завдана посівам, може бути величезною.

11. Оскільки в навколишнє середовище потрапляє більше фреонів, процес руйнування озонового шару продовжується.

12. Озоновий шар захищає життя на землі від шкідливого впливу ультрафіолетового випромінювання сонця.

## UNIT 3 AIR POLLUTION



### *Exercise 1.*

*Before reading the text about air pollution let's discuss the following questions.*

1. Where is the most air pollution found?
2. What does air pollution come from?
3. How can we stop air pollution?
4. What is air pollution?
5. What is worse air pollution or water pollution?

### *Exercise 2.*

*Learn the vocabulary.*

anthropogenic – антропогенний

brick kiln – піч для випалювання цегли

droplet – крапелька

emission – викид

exhaust – вихлопний

harmful – шкідливий

incineration – спалювання

insulation – ізоляція

kerosene ['ker.ə.si:n] – керосин

particle – частинка

pollutant – забруднювач

seep – просочуватися

volatile organic compounds (vocs) – летючі органічні сполуки

### Exercise 3.

Read and translate the following text into Ukrainian.

## Air Pollution, Sources and Types

Air pollution consists of chemicals or particles in the air that can harm the health of humans or other living organisms. It also causes damage to the natural environment or built environment. Pollutants in the air take many forms. They can be gases, solid particles or liquid droplets.



## World Health Organization

According to the World Health Organization (WHO), each year air pollution is responsible for nearly seven million deaths around the globe. Nine out of ten human beings currently breathe air that exceeds the WHO's guideline limits for pollutants, with those living in low- and middle-income countries suffering the most.

### Sources of Air Pollution

Pollution enters the Earth's atmosphere in many different ways. Most air pollution is created by people, taking the form of emissions from factories, cars, planes or aerosol cans. Second-hand cigarette smoke is also considered air pollution. These man-made sources of pollution are called *anthropogenic sources*.

Some types of air pollution, such as smoke from wildfires or ash from volcanoes, occur naturally. These are called *natural sources*.

### Outdoor Pollution

The major outdoor pollution sources include power generation, vehicles, agriculture/waste incineration, industry and building heating systems.

Air pollution is most common in large cities where emissions from many different sources are concentrated. Sometimes, mountains or tall buildings prevent air pollution from spreading out. This air pollution often appears as a cloud making the air murky. It is called smog. The word "smog" comes from combining the words "smoke" and "fog".

Large cities in poor and developing nations tend to have more air pollution than cities in developed nations. According to the WHO, some of the world's most polluted cities are Karachi, Pakistan; New Delhi, India; Beijing, China; Lima, Peru; and Cairo, Egypt. However, many developed nations also have air



pollution problems. For example, Los Angeles, California, is nicknamed Smog City.

Air pollution is usually thought of as smoke from large factories or exhaust from vehicles. But there are many types of indoor air pollution as well.

#### *Indoor Pollution*

Heating a house by burning substances such as kerosene, wood and coal can contaminate the air inside the house. Ash and smoke make breathing difficult, and they can stick to walls, food, and clothing.

Naturally-occurring radon gas, a cancer-causing material, can also build up in homes. Radon is released through the surface of the Earth. Inexpensive systems installed by professionals can reduce radon levels.



Some construction materials, including insulation, are also dangerous to people's health. In addition, ventilation or air movement in homes and rooms can lead to the spread of toxic mold. A single colony of mold may exist in a damp, cool place in a house, such as between walls. The mold's spores enter the air and spread throughout the house. People can become sick from breathing in the spores.

The levels of *indoor* air pollutants are often 2 to 5 times higher than *outdoor* levels, and in some cases these levels can exceed 100 times that of outdoor levels of the same pollutants. In other words, sometimes the air inside can be more harmful than the air outside.

#### ***Exercise 4.***

***Answer the following questions.***

1. How can one define the term "air pollution"?
2. Are almost 6 or 7 million deaths around the globe caused by air pollution?
3. Name two main sources of air pollution.
4. What types of air pollution occur naturally?
5. What do the major outdoor pollution sources include?
6. In what case does air pollution make the air murky?
7. What is the nickname of Los Angeles?
8. What can contaminate the air inside the house?
9. What gas is released through the surface of the Earth?
10. What can exist in cool places in a house?

11. What materials used in housing are dangerous to people's health?
12. The air outside is always more harmful than the air inside, isn't it?

***Exercise 5.***

***Read the following text and choose the right answer to the given statements below.***

Air pollution refers to the contamination of the air, irrespective of indoors or outside. A physical, biological or chemical alteration to the air in the atmosphere can be termed as pollution. It occurs when any harmful gases, dust or smoke enters into the atmosphere and makes it difficult for plants, animals and humans to survive as the air becomes dirty.

Outdoor air pollution is largely a consequence of the inefficient combustion of fuels for transport, power generation and other human activities like home heating and cooking. Urban outdoor air pollution is estimated to cause one million deaths worldwide per year. Children are particularly at risk, comprising 50% of these deaths.

Indoor cooking and heating with bio-fuels produce high levels of pollutants that have deadly consequences. For example, they can lead to acute lower respiratory infections in children under age five and lung cancer in adults. Indoor air pollution is responsible for two million people dying annually, half of whom are children. It is clear that the time for action has come. Measures must be taken before more lives are lost.

*1. The expression "irrespective of" in the first paragraph is closest to meaning .....*

- a) whether
- b) solely
- c) except

*2. Pollution can be defined as .....*

- a) a gas outside the atmosphere.
- b) an alteration to plants and animals.
- c) any harmful change to the air.

*3. How many children die worldwide due to outdoor air pollution?*

- a) 3 million
- b) 1 million
- c) 500,000

*4. What does "they" refer to in the third paragraph?*

- a) bio-fuels
- b) pollutants
- c) consequences



5. *The purpose of this text is to .....*

- a) inform
- b) advertise
- c) exaggerate

**Exercise 6.**

**Read the following text and fill in the proper words from the word-box.**

**Effects of Air Pollution**

*Cause, causes, direct, increase, imbalance, stray, damages, decades, leave, heart, glaciers, harmful.*

The hazardous effects of air pollution on the environment include:

*Diseases*

Air pollution has resulted in several respiratory disorders and 1) ..... diseases among humans. The cases of lung cancer have increased in the last few 2) ..... Children living near polluted areas are more prone to pneumonia and asthma. Many people die every year due to the 3) ..... or indirect effects of air pollution.

*Global Warming*

Due to the emission of greenhouse gases, there is an 4) ..... in the gaseous composition of the air. This has led to an increase in the temperature of the earth. This 5) ..... in earth's temperature is known as global warming. This has resulted in the melting of 6) ..... and an increase in sea levels. Many areas are submerged underwater.

*Acid Rain*

The burning of fossil fuels releases 7) ..... gases such as nitrogen oxides and sulphur oxides in the air. The water droplets combine with these pollutants, become acidic and fall as acid rain which 8) ..... human, animal and plant life.

*Ozone Layer Depletion*

The release of chlorofluorocarbons, halons, and hydro-chlorofluorocarbons in the atmosphere is the major 9) ..... of depletion of the ozone layer. The depleting ozone layer does not prevent the harmful ultraviolet rays coming from the sun and 10) ..... skin diseases and eye problems among individuals.

*Effect on Animals*

The air pollutants suspend in the water bodies and affect aquatic life. Pollution also compels the animals to 11) ..... their habitat and shift to a new place. This renders them 12) ..... and has also led to the extinction of a large number of animal species.

**Exercise 7.**

**Match the words from column A with their definitions from column B.**

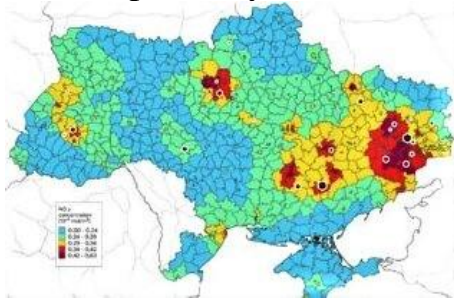
<b>A</b>	<b>B</b>
1 acid rain	A the number and variety of plant and animal species that exist in a particular environmental area
2 biodegradable	B a long period when there is little or no rain
3 biodiversity	C a large amount of water covering an area that is usually dry
4 carbon monoxide	D the cutting down of trees in a large area
5 deforestation	E rain which contains large amounts of harmful chemicals
6 desertification	F to collect rubbish to produce useful materials which can be used again
7 disposable products	G a form of energy that can be produced as quickly as it is used
8 drought	H describes a type of petrol or other substance that does not contain lead
9 earthquake	I things like minerals, forests, coal, etc. which exist in a place and can be used by people
10 endangered species	J the process of conserving energy
11 energy conservation	K a sudden violent movement of the Earth's surface, sometimes causing great damage
12 extinction	L the degradation of natural resources because of human pressure
13 flood	M a development that is causing little damage to the environment, therefore able to continue for a long time
14 fumes	N the process by which land changes into desert
15 natural resources	O animals or plants which may soon not exist because there are very few now alive
16 greenhouse effect	P increase in the amount of carbon dioxide and other gases in the atmosphere causing a gradual warming
17 renewable energy	Q the poisonous gas formed by the burning of carbon, especially in the form of car fuel
18 oil slick	R items intended to be thrown away after use
19 recycle waste	S being destroyed so that they no longer exist
20 sustainable development	T strong, unpleasant and dangerous gas or smoke
21 unleaded petrol	U a layer of oil that is floating over a large area of the surface of the sea
22 use up natural resources	V able to decay naturally and harmlessly

### **Exercise 8.**

**Read the following text and discuss the questions given below with your partner.**

#### **The Main Causes of Air Pollution in Ukraine**

The main air pollutant in Ukraine is from industry. It produces almost twice as many harmful emissions as motor transport which equates to 65 and 35 per cent, respectively.



Amongst industrial facilities, the main air pollutants are thermal power plants which account for about 29 % of all harmful emissions into the atmosphere. In general, the energy sector, metallurgical and coal industries account for 33, 25 and 23 per cent of all pollutants emitted into the atmosphere, respectively, the chemical and petrochemical industries account for approximately 3 %. The largest share of emissions comes from the Donetsk-Dnieper region which contributes a massive 79 % of total emissions in the country.

According to experts, the main air pollutants in Ukraine are enterprises of ferrous metallurgy, thermal energy, coal, oil and gas and cement industries. The largest share of pollutant emissions (41.3 %, excluding carbon dioxide) is accounted for by the production and distribution of electricity, gas and water.

1. What are the main causes of air pollution in Ukraine?
2. What is the government doing about air pollution in Ukraine?
3. What is the air quality forecast for Ukraine?
4. What is Ukraine doing about transportation and the pollution it causes?
5. What can be done to improve air quality in Ukraine?

### **Exercise 9.**

**Read the following statements and choose the proper answer.**

1. Many factories \_\_\_\_\_ harmful pollutants into the atmosphere.  
a) minimize  
b) donate  
c) emit
  
2. You can \_\_\_\_\_ plastic bags again and again until they get holes in them.  
a) reuse  
b) resume  
c) reduce

3. *Americans \_\_\_\_\_ many products that are sold with excess packaging.*
- a) consume
  - b) protect
  - c) pollute
4. *Burning fossil fuels can cause \_\_\_\_\_ to fall from the clouds.*
- a) smog
  - b) carbon footprints
  - c) acid rain
5. *You can \_\_\_\_\_ organic household waste by having a compost bin in the garden.*
- a) protect
  - b) recycle
  - c) fertilize
6. *Instead of throwing away old clothes, \_\_\_\_\_ them to organizations that help poor people.*
- a) consume
  - b) donate
  - c) emit
7. *The company is \_\_\_\_\_ an ancient forest in order to sell the wood.*
- a) clear-cutting
  - b) reducing
  - c) recycling
8. *Which is an example of climate change?*
- a) reforestation
  - b) global warming
  - c) air pollution
9. *Environmentalists understand the importance of \_\_\_\_\_ forests and wetlands.*
- a) minimizing
  - b) banning
  - c) preserving
10. *We will \_\_\_\_\_ if the government supports fossil fuel companies instead of tackling global warming.*
- a) prevent
  - b) protest
  - c) protect

11. *Energy-efficient vehicles and appliances use .....*

- a) no energy
- b) more energy
- c) less energy

12. *Regulations only stop factories from \_\_\_\_\_ the environment if they're enforced.*

- a) protecting
- b) consuming
- c) polluting

13. *We should \_\_\_\_\_ pollutants that seriously damage our health or the environment.*

- a) emit
- b) use up
- c) ban

14. *Which can cause serious health or environmental problems?*

- a) hazardous waste
- b) domestic waste
- c) recycled waste

15. *If you're working for a reforestation project you're probably \_\_\_\_\_ trees.*

- a) planting
- b) clearcutting
- c) poisoning

16. *The protection and preservation of natural resources and the environment is called .....*

- a) contamination
- b) conservation
- c) protectionism

17. *To stop global warming we have to use \_\_\_\_\_ energy like solar and wind.*

- a) self-sufficient
- b) fossil-fuel
- c) renewable

18. *Gases that stop heat from escaping into space are called \_\_\_\_\_ gases.*

- a) green
- b) greenhouse

c) zero-emission

19. The place in which a plant, animal, bird or fish normally lives is its

.....

- a) habitat
- b) food chain
- c) eco-community

20. We're going to live in an environmentally-friendly .....

- a) ecosystem
- b) ecovillage
- c) habitat

**Exercise 10.**

Follow the link <https://www.youtube.com/watch?v=e6rglsLy1Ys> to watch the video about air pollution. Make up a dialogue and introduce it with your partner.

**Exercise 11.**

Print the grid with the letters. Search for 14 words hidden within the grid. Words can be written in any direction including backwards and along diagonals.



### *Exercise 12.*

*Read the following text and translate it into Ukrainian. Make up 12 different questions.*

## **Air Pollution Control Measures**

### *Avoiding Using Vehicles*

People should avoid using vehicles for shorter distances. Rather, they should prefer public modes of transport to travel from one place to another. This not only prevents pollution, but also conserves energy.



### *Use of Clean Energy Resources*

The use of solar, wind and geothermal energies reduce air pollution at a larger level. Various countries have implemented the use of these resources as a step towards a cleaner environment.



### *Energy Conservation*

A large number of fossil fuels are burnt to generate electricity. Therefore, do not forget to switch off the electrical appliances when not in use. Thus, you can save the environment at the individual level. Use of energy-efficient devices, such as compact fluorescent lamps (CFLs), also controls pollution to a greater level.

Minimising and reducing the use of fire and fire products.

### *Fuel Substitution*

Petrol and diesel are being replaced by CNG – Compressed Natural Gas fueled vehicles. These are mostly adopted by vehicles that aren't fully operating with ideal emission engines.



The pollutants from industrial emissions can be controlled or treated at the source itself to reduce its effects. For example, if the reactions of a certain raw material yield a pollutant, then the raw materials can be substituted with other less polluting materials.

Another way of controlling air pollution caused by industries is to modify and maintain existing pieces of equipment so that the emission of pollutants is minimised.



A very effective way of controlling air pollution is by diluting the air pollutants.

The last and the best way of reducing the ill effects of air pollution is tree plantation. Plants and trees reduce a large number of pollutants in the air. Ideally, planting trees in areas of high pollution levels will be extremely effective.

### ***Exercise 13.***

***Translate the following sentences into English.***

1. Атмосферне повітря є одним з тих компонентів довкілля, від стану якого залежить стан здоров'я людини.

2. Від забруднення повітря страждають всі живі істоти, які вимушені мігрувати в пошуках чистішого середовища існування, що викликає розбалансованість екосистем.

3. Порівняно з 90-ми роками двадцятого століття екологічна ситуація в Україні значно покращилась за рахунок закриття деяких особливо небезпечних підприємств.

4. Одне з основних джерел забруднення атмосфери – автомобільний транспорт.

5. Максимальна кількість викидів реєструється в години пік, причому всередині автомобіля концентрація шкідливих речовин найбільша.

6. Аналіз поточної ситуації із захисту атмосферного повітря відповідно до стандартів Євросоюзу встановлює невідповідність вимогам Європейського природоохоронного права.

7. Наразі є нагальна потреба у розробці більш жорстких нормативів на викиди забруднювальних речовин в атмосферне повітря стаціонарними джерелами викидів.

8. Кожен подих мешканця міста містить від 5 до 50 мільйонів частинок бруду, пилу, алергенів, аерозолів, вихлопних газів, смогу та інших забруднювачів.

9. Джерелом забруднення повітря є все, що нас оточує: пил вулиць, вихлопи автомобілів, лісові пожежі, важкі метали і т. д.

10. Все, що міститься в повітрі, переважно потрапляє в наші легені, але також осідає на шкірі, слизових очей, рота, носа і в вухах.

11. Крім пилу, що формується всередині приміщення, є також сотні видів забруднень, що потрапляють в приміщення з вулиці.

12. Діти менш стійкі до забруднювачів в повітрі і до різних несприятливих факторів загалом, оскільки їх імунітет ще формується.



## UNIT 4

### LAND POLLUTION



#### *Exercise 1.*

*Before reading the text about land pollution let's discuss the following questions.*

1. Where is the most land pollution found?
2. What does land pollution come from?
3. How can we stop land pollution?
4. What is land pollution?
5. What is worse land pollution or water pollution?

#### *Exercise 2.*

*Learn the vocabulary.*

accumulation – накопичення

agricultural waste – сільськогосподарські відходи

be restored – бути відновленим

consumption – споживання

contamination – забруднення

contribute to – сприяти

destruction – руйнування

dumping – сміттєзвалище

ecological balance – екологічний баланс

health hazards – небезпека для здоров'я

incinerator – сміттєспалювальна установка

industrial waste – промислові відходи

natural ecosystem – природна екосистема

poisonous – отруйний

reduction – скорочення

renewable energy – відновна енергія

scrap metals – металобрухт  
substances – речовини  
survive – виживати

### **Exercise 3.**

**Read and translate the following text into Ukrainian.**

## **Land Pollution, Causes and Effects**

Land pollution refers to the deterioration of the earth's land surfaces at and below ground level. It is caused by the accumulation of solid and liquid waste materials that contaminate groundwater and soil. These waste materials are often referred to as municipal solid waste (MSW), which includes both hazardous and non-hazardous waste.

### *Causes of Land Pollution*

There are many causes of land pollution, the main contributors include litter, waste, urbanization, construction, mining, extraction, and agriculture.

#### *Litter*

One of the main causes of land pollution is littering that is the improper disposal of waste products. According to a study by Litter in America, litter cleanup costs the U.S. more than an estimated \$11.5 billion each year.



Every cigarette butt tossed on the ground or food wrapper tossed out of a car window can lead to increased land pollution. A large volume of litter can be found along roadways and waterways.

Illegal dumping also contributes to land pollution. Often people will dump waste illegally in places such as forests, open fields and ditches rather than in approved dumping areas. Common types of illegally dumped waste include asbestos waste, cars and waste that can be recycled or reused.

All litter, whether intentional or not, causes pollution by releasing chemicals and microparticles as it degrades.

#### *Waste*

Even if you throw your trash into the bin and take it out to be picked up by the garbage truck, its journey is not complete. Your trash has to go somewhere and where it typically goes is a landfill. When not managed properly, landfills can also contribute to land pollution.



For example, it wasn't until the mid-20th century that solid wastes were collected with the environment in mind. Prior to that, waste was typically left on top of the ground in open dumps. There are now significantly safer practices for disposing of waste, including the recovery and use of landfill gas for electricity.

### *Urbanization and Construction*

Large quantities of people living close together, producing trash and littering in a dense area, inevitably lead to land pollution. To accommodate our increasing population, construction activities also occur, which result in large waste materials, such as metal, plastic, wood and bricks.

When these materials are not properly disposed of, it contributes to the land pollution of that area. To help reduce the environmental impact of construction sites, it's important to work with partners that offer comprehensive solutions to achieve cost-effective construction recycling and waste disposal plans.

### *Mining and Extraction*

Mining is the extraction of minerals and other geological materials from the ground, which are then used for a wide range of purposes including but not limited to producing gasoline for automobiles, generating electricity and selling materials such as gold and silver.

This extraction and the methods used, however, deplete the earth of its natural resources and cause damage and land pollution in its wake. It also frequently damages the surrounding area's natural ecosystems, altering the landscape, destroying natural habitats for wildlife and ultimately reducing biodiversity.

For example, coal mining often uses acid mine drainage (AMD) to help extract coal from its surroundings. When the runoff of acid used in this method finds its way into local natural water supplies and sources, it has a chemical reaction with the surrounding rocks and sand and creates sulfuric acid. Sulfuric acid is toxic not only to humans but to most other plants and wildlife as well.

Other types of extraction, such as drilling for oil, have also caused massive damage to local ecosystems when operations go wrong and are a major contributor to ocean pollution.

### *Agriculture*

Agriculture is foundational for both everyday life, as well as the economy as a whole. It also, however, can have profound effects on the planet. Agricultural pollution occurs when contamination created as a by-product of raising livestock and growing food crops is released into the environment, and the contamination is vast.

Major contributors to agricultural-related land pollution include run-off from pesticides, herbicides, fertilizer and animal waste.

Unsustainable farming practices such as intensive cultivation and overgrazing can also strip the land of its natural nutrients, leaving it no longer viable for future crops unless it is restored.



#### *Effects of Land Pollution*

Land pollution touches essentially every area of the living world, including:

- contamination of drinking water;
- polluted soil, which leads to a loss of fertile land for agriculture and a reduction in the availability of food;
- climate change, which causes an onslaught of disastrous problems, including flash floods and irregular rainfalls;
- the endangerment and extinction of species in wildlife;
- habitat destruction, where animal and plants wiped out in certain areas;
- habitat shifting, where animals are forced to flee where they live in order to survive;
- an increase in wildfires due to polluted areas often becoming very dry;
- increased air pollution, which burning waste contributes to;
- increased soil pollutants can enter the body through the food chain, and cause health issues;
- increased human health issues, including cancer, respiratory illnesses, and congenital disabilities, caused by exposure to harmful chemicals.

#### ***Exercise 4.***

***Answer the following questions.***

1. How can one define the term “land pollution”?
2. Name the main causes of land pollution.
3. How does Illegal dumping contribute to land pollution?
4. What types of land pollution occur intentionally?
5. What are significantly safer practices for disposing of waste?
6. In what case does urbanization lead to land pollution?
7. What should be done to reduce the environmental impact of construction sites?
8. Does mining deplete the earth of its natural resources?
9. When does agricultural pollution occur?

10. What are major contributors to agricultural-related land pollution?
11. What farming practices used in agriculture are dangerous to people's health?
12. Name the effects of land pollution.

***Exercise 5.***

***Read the text "Land Pollution, Causes and Effects" in exercise 3 and decide whether the following statements are true (T) or false (F). Correct the false ones.***

1. Land pollution refers to the deterioration of the earth's land surfaces at and below ground level.
2. There are many causes of land pollution, the main contributors include litter, waste, urbanization, construction, mining, extraction and agriculture.
3. One of the main causes of land pollution is littering that is the proper disposal of waste products.
4. Partners offer comprehensive solutions to achieve cost-consuming construction recycling and waste disposal plans.
5. Mining is the extraction of minerals and other geological materials from the ground.
6. This extraction and the methods used enrich the earth natural resources.
7. Agricultural pollution occurs when contamination created as a by-product of raising livestock and growing food crops is released into the environment.
8. The types of extraction, such as drilling for oil, has caused less damage to local ecosystems.

***Exercise 6.***

***Read the following text and choose the right answer to the given statements below.***

### **Solid Wastes**

Solid Wastes are unwanted solid materials such as garbage, paper, plastics and other synthetic materials, metals and wood. Most of them are in the form of agricultural, mineral, and industrial waste. Agricultural and mineral waste generally go unnoticed, for they are concentrated in nonurban settings. Industrial waste is far more noticeable, since it often contributes to the waste disposal problems facing highly populated areas. Fly ash from electric utility companies, scrap metals, rags, and bales and drums of industrial by-products must all be thrown away somewhere.

Where does it all go? The solid waste collected in most municipalities is simply hauled away to open dumps. Only a small percentage gets buried in sanitary landfills or burned in incinerators. Dumping exhausts land space that

could be more fruitfully used; it also poses possible health hazards. Incineration (along with fires due to spontaneous combustion in open dumps) contributes to pollution of the air.

To underscore the problems involved, let us look at some examples. By weight, paper and paper products are a major type of refuse. In recent years paper consumption has increased to the point that the average American now uses several hundred pounds annually. Much of this is associated with the use of heavily packaged products.



Very little paper is recycled in the United States, 80 percent is simply dumped or burned. While paper and paper products are bulky and take up space, fortunately they do eventually decompose. When burned, however, they contribute to air pollution.

Plastics are a different matter. The production and use of plastics have grown enormously in recent years. Modern plastics are substances with high durability and resistance to biological decomposition. Plastics thus are being used in the place of wood, metals, and cloth for many products. It is their very properties that render plastics an ecological problem. Since they do not decompose, they simply pile up permanently. If burned, plastics are likely to melt and foul up incinerator operations, while emitting gaseous pollutants that are often poisonous. It has been claimed that plastics pollute the air even in garbage dumps, because of solar heat and the heat processes that lead to spontaneous combustion.

Metal cans and glass bottles are another solid waste problem. Cans decompose too slowly to disappear before even more cans are dumped. Glass is rather invulnerable to natural decomposition. Bottles, along with some metals used in cans can be reclaimed for use. But too little is being done along such lines. Corporate producers could help reduce waste volume. Instead they sell throwaways, which often end up littering our roadways and recreational areas. The throwaway trend may be convenient for consumers, but it is not a sign of ecological sanity. Though a number of states have begun to restrict the use of disposable bottles, the waste problem overall continues to grow.

*1. The expression “generally go unnoticed” in the first paragraph is closest to meaning .....*

- a) are inspected
- b) are ignored
- c) are situated

2. *Plastics can be defined as .....*
- a) scrap metals
  - b) substances with high durability and resistance to biological decomposition
  - c) substances that eventually decompose
3. *What percent of paper is dumped or burnt in the United States?*
- a) 50
  - b) 70
  - c) 80
4. *What does "that" refer to in the 4<sup>th</sup> paragraph?*
- a) gaseous pollutants
  - b) incinerator operations
  - c) garbage dumps
5. *The purpose of this text is to .....*
- a) inform
  - b) apologize
  - c) diminish

**Exercise 7.**

*Sort out the words given below into two categories:*

<i>Ecological Problems</i>	<i>Reasons</i>

Pollution, cutting down of forests, reduction of the ozone layer, famine, car exhaust fumes, extinction of species, global warming, using of chemical fertilizers, power station emissions, destruction of natural resources, overcrowding, unrecyclable packaging, overpopulation, littering, noise abuse, greenhouse gases, incurable diseases, urbanization, radiation.

**Exercise .8.**

*Follow the link <https://www.britannica.com/video/219033/Discover-Major-Kinds-of-Pollution> to watch the video about land pollution. Make up a dialogue and introduce it with your partner.*

**Exercise 9.**

*Match the words from column A with their Ukrainian equivalents from column B.*

A	B
1 agricultural waste	A отруйний
2 biodegradable	B самозаймання пожеж
3 industrial waste	C невразливий
4 scrap metals	D сільськогосподарські відходи
5 incinerators	E біорожчинні
6 sanitary landfills	F промислові відходи
7 dumping	G природні ресурси
8 health hazards	H синтетичні матеріали
9 biological decomposition	I сміттєспалювальні установки
10 poisonous	J відновна енергія
11 spontaneous combustion	K небезпека для здоров'я
12 recreational areas	L відкриті звалища
13 ecological sanity	M одноразовий
14 littering	N тривалий розвиток
15 natural resources	O сміття
16 disposable	P переробка відходів
17 renewable energy	Q зони відпочинку
18 synthetic materials	R сміттєзвалище
19 recycle waste	S речовини
20 sustainable development	T біологічного розкладання
21 substances	U металобрухт
22 invulnerable	V екологічне здоров'я

**Exercise 10.**

**Read and translate the following text into Ukrainian. Make up 12 different questions.**

**How to Prevent Land Pollution**

Given the disastrous effects of land pollution, taking preventive measures to reduce its impact moving forward is crucial. Finding solutions to land pollution is not a matter of discovering a silver bullet – it will require efforts on multiple fronts.

*Sustainable Agricultural Practices*

Given that the use of pesticides and chemicals in farming and agriculture greatly contributes to land pollution, finding alternatives will help to reduce the environmental impact. Farmers, for instance, can use natural ingredients by switching from bio-fertilizers to manure or enrolling in programs that provide education and resources regarding sustainable farming.



On the individual level, supporting environmentally-conscious, local farmers at your closest farmer's market or local grocery store can help to build up business for farmers with more sustainable farming practices. Another option is to contribute to or volunteer in an urban garden in your neighborhood.

### *Reforestation*

Reforestation involves replanting an area with trees. This can be needed for areas that have experienced wildfires, for instance, or where trees had been chopped down and milled. This process helps to bind the soil, which helps to protect it from land pollution and prevents soil erosion and flooding.



### *Solid Waste Treatments*

When solid waste is not properly treated it can increase the level of toxic chemicals and hazardous substances in soil. Chemical treatment methods under a controlled environment can help reduce land pollution. This solid waste treatment method includes neutralization. This treatment alters the pH level of waste before it gets dumped into landfills.

### *Reduce, Reuse and Recycle*

At the individual level, there are many things we can do to reduce our contribution to land pollution. One of the simplest ways to do this is to reuse or recycle items so that you aren't creating waste out of a material or item that still has a purpose. With the growing awareness around what can be recycled and an



increase in recycling bins in many cities, it has never been easier to recycle.

### *Composting*

Another way to reduce land pollution is through composting. According to the United States Environmental Protection Agency, food scraps and yard waste together currently make up more than 30% of what we throw away and could be composted instead. Reducing and reusing waste products ensures that the environment won't go to waste.

**Exercise 11.**

**Replace the pronouns in the following sentences with the nouns in the word-box.**

*Noise abuse, unrecyclable packaging, car exhaust fumes, greenhouse effect, famine and droughts.*

1. They are partly responsible for acid rain.
2. The level of the sea will rise as a result of it.
3. The government should forbid it, because it contains ozone-damaging gases.
4. It can do irreparable damage to hearing.
5. Changing of ecological balance is the main cause of them.

**Exercise 12.**

**Read and translate the following text into Ukrainian. Complete the tasks below and share your ideas with the whole class.**

### **Recycle That Trash**

In highly industrialized countries, where most people have a modern way of life, an average family throws away over 1 tonne of rubbish every year.

Every year Americans produce 158 million tons of waste enough to fill a convoy of 10-ton garbage trucks stretching halfway from the Earth to the Moon. Most of their rubbish consists of paper from packaging and kitchen waste. A lot of this could be recycled and used again. Give some of that trash a second chance. Start to recycle things yourself and get involved in community recycling projects.

In stores, ask for paper bags, not plastic. Reuse the bags or use no bags.

Ask your parents to use cloth towels and napkins instead of paper.

Reuse computer paper and other clean scrap paper.

Collect newspapers, aluminum cans, and glass containers. Take the lids and tops off the glass containers. The labels can stay on. Take them to the nearest recycling center.

If your family has a garden, start a compost pile. This is a way to recycle grass, leaves, and raw fruit and vegetable scraps. Cover each layer of scraps with a layer of soil. The compost pile becomes fertilizer.

Help the recycling effort by buying products made from recycled material.

1. *Find out which of the following items go into your garbage.*

- cans (aluminium and/or tin)
- glass bottles
- paper, aluminium foil

- containers or packaging materials
- cardboard
- plastic containers
- newspaper and/or magazines
- grocery paper bags
- grocery plastic bags
- batteries
- clothing
- packaging waste

2. *Draw a table showing how many of the items mentioned above your family throws away every day for a week.*

***Exercise 13.***

***Do the following test, sum up your score and find out if you are an environmental friendly person.***

1. *Imagine you are on holiday abroad. You eat loads of chocolate-covered sweets but there are any rubbish bins to put their wrappers in. What do you do?*

- a. Keep the wrappers in your packet until you see a bin.
- b. Throw them on the ground. It's not your fault there aren't enough rubbish bins.
- c. It depends. If there a lot of rubbish on the floor, you might "drop them accidentally".

2. *On the way home, you feel very thirsty. What are you buying?*

- a. Something not recycled plastic bottle.
- b. Something in a glass bottle or aluminum can.
- c. Something in the box.

3. *Your personal stereo always needs new batteries. What are you doing?*

- a. Buy rechargeable batteries.
- b. Put the old batteries in the bin and buy new ones.
- c. Buy new ones and take the old ones to a recycling centre.

4. *If you lived near a beach, how would you react if a fast food restaurant opened near the beach.*

- a. Be pleased but also worried about more rubbish on the beach.
- b. Be pleased. Now you can eat burgers on the beach.
- c. You never eat at fast food places because there is too much packaging.

5. *You buy a couple of things in a shop. When you pay, the cashier is about to put the things in a plastic bag. What do you say?*

- a. «No, thank you». (You have brought your own bag from home.)
- b. Nothing. You let him/her put the things in the bag.
- c. It depends if you can carry the things easily without a bag.

6. *There are a couple of flies in your bedroom. They are annoying you. What do you do?*

- a. Try to kill them with a newspaper.
- b. Try to kill them with a horrible-smelling aerosol.
- c. Hit the air with a newspaper so they leave you alone.

*Now add up your score:*

- 1 a=3 b=1 c=2
- 2 a=1 b=3 c=2
- 3 a=3 b=1 c=2
- 4 a=2 b=1 c=3
- 5 a=3 b=1 c=2
- 6 a=2 b=1 c=3

#### ***Exercise 14.***

***Translate the following sentences into English.***

1. Сміття та інші форми твердих відходів утворюють сільськогосподарські, мінеральні і промислові відходи.
2. Сільськогосподарські та мінеральні відходи зазвичай залишаються непоміченими, оскільки вони зосереджені не в міських умовах.
3. Промислові відходи набагато помітніші, оскільки вони часто створюють проблеми з утилізацією відходів, які постають у густонаселених районах.
4. Лише невеликий відсоток твердих відходів захоронюється на санітарних звалищах або спалюється в сміттеспалювальних установках.
5. Спалювання сприяє забрудненню повітря.
6. Папір і паперові вироби є основним видом сміття.
7. Хоча папір і паперові вироби громіздкі та займають місце, вони зрештою розкладаються.
8. За останні роки виробництво та використання пластмас надзвичайно зросло.
9. Сучасний пластик – це речовина з високою міцністю та стійкістю до біологічного розкладання.
10. У разі спалювання пластик може розплавитися та порушити роботу сміттеспалювального заводу, викидаючи в такому разі газоподібні забруднювальні речовини, які часто є отруйними.
11. Пластик забруднює повітря навіть на сміттєвих звалищах через сонячне тепло та спеку, що призводять до самозаймання.
12. Проблемою твердих відходів є металеві банки та скляні пляшки.

## UNIT 5

### DEFORESTATION AND LOGGING



#### *Exercise 1.*

*Read and discuss the following questions.*

1. Is there a problem of deforestation in Ukraine nowadays?
  2. What will happen if deforestation is not stopped?
  3. What will happen if we stop deforestation?
  4. Why is it so difficult to stop deforestation?
  5. Can you affect deforestation?
  6. How do humans impact deforestation?
  7. Who supports deforestation?
  8. What are 3 main things for reducing the impact of logging from the list below?
- Plant a tree. ...
  - Use less paper. ...
  - Recycle paper and cardboard. ...
  - Use recycled products. ...
  - Buy only sustainable wood products. ...
  - Don't buy products containing palm oil. ...
  - Reduce meat consumption. ...
  - Do not burn firewood excessively.

#### *Exercise 2.*

*Look at the list of five largest rainforests of the world. Try to guess and rank them according to their size from 1 to 5, with 1 being the largest rainforest.*

<b>Largest Rainforests</b>	<b>Rank</b>
Australasia [ɒ'streɪl'eɪzə] – is a region that comprises Australia, New Zealand and some neighbouring islands in the Pacific Ocean.	
Indo-Burma ['bɜ:mə] – is a region covering Cambodia, Lao PDR, Myanmar, Thailand, Viet Nam, and parts of southern China.	
Congo – is a country in Central Africa bordered to the west by the South Atlantic Ocean.	
Amazon – is the most broadleaf tropical rainforest in the Amazon biome that covers most of the Amazon basin of South America.	
Sundaland – is a biodiversity region located in Indonesia, Malaysia and Brunei.	

### ***Exercise 3.***

#### ***Learn the vocabulary.***

alter – змінювати, видозмінювати  
ash – зола  
carbon dioxide – вуглекислий газ  
cattle ranching – розведення великої рогатої худоби  
deforestation – вирубування лісів  
fertile – плідний  
forest shifts – лісові зрушення  
grazing – випас  
logging – лісозаготівля  
oil palm – олійна пальма  
prone – схильний  
rainforest – тропічний ліс  
rubber tree – каучукове дерево  
slash-and-burn – підсічно-вогнева  
swath – просіка  
timber – деревина  
vulnerable – вразливий

### ***Exercise 4.***

#### ***Read and translate the following text into Ukrainian.***

### **Deforestation**

Deforestation is the purposeful clearing of forested land. Throughout history and into modern times, forests have been razed to make space for

agriculture and animal grazing, and to obtain wood for fuel, manufacturing and construction.

Deforestation has greatly altered landscapes around the world. About 2,000 years ago, 80 percent of Western Europe was forested; today the figure is 34 percent. In North America, about half of the forests in the eastern part of the continent were cut down from the 1600s to the 1870s for timber and agriculture. China has lost great expanses of its forests over the past 4,000 years and now just over 20 percent of it is forested. Much of Earth's farmland was once forests.

Today, the greatest amount of deforestation is occurring in tropical rainforests, aided by extensive road construction into regions that were once almost inaccessible. Building or upgrading roads into forests makes them more accessible for exploitation. Slash-and-burn agriculture is a big contributor to deforestation in the tropics.

With this agricultural method, farmers burn large swaths of forest, allowing the ash to fertilize the land for



crops. The land is only fertile for a few years, however, after which the farmers move on to repeat the process elsewhere. Tropical forests are also cleared to make way for logging, cattle ranching and oil palm and rubber tree plantations.

Deforestation can result in more carbon dioxide being released into the atmosphere. That is because trees take in carbon dioxide from the air for photosynthesis, and carbon is locked chemically in their wood. When trees are burnt, this carbon returns to the atmosphere as carbon dioxide. With fewer trees around to take in the carbon dioxide, this greenhouse gas accumulates in the atmosphere and accelerates global warming.

Deforestation also threatens the world's biodiversity. Tropical forests are home to great numbers of animal and plant species. When forests are logged or burnt, it can drive many of those species into extinction. Some scientists say we are already in the midst of a mass-extinction episode.

More immediately, the loss of trees from a forest can leave soil more prone to erosion. This causes the remaining plants to become more vulnerable to fire as the forest shifts from being a closed, moist environment to an open, dry one.

While deforestation can be permanent, this is not always the case. In North America, for example, forests in many areas are returning thanks to conservation efforts.

**Exercise 5.**

**Look through the text «Deforestation» in exercise 4 and make up 12 different questions.**

**Exercise 6.**

**Print the grid with the letters. Search for 13 words hidden within the grid. Words can be written in any direction including backwards and along diagonals.**

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

**Exercise 7.**

**Read the following statements about the impacts of deforestation and habitat removal on biodiversity and choose the proper answer.**

*1. What impact does burning peat have on the environment?*

A Burning peat absorbs carbon dioxide from the atmosphere and decreases the greenhouse effect.

B Burning peat releases large amounts of sulfur dioxide, which causes acid rain.

C Burning peat releases large amounts of carbon dioxide, which contributes to the greenhouse effect.

D Burning peat requires huge amounts of energy, which is obtained from nuclear fuels.



2. *Describe how deforestation affects biodiversity.*

A Deforestation allows the growth of small organisms on the forest floor, so biodiversity increases.

B Deforestation removes habitats and sources of food, so biodiversity increases.

C Deforestation removes habitats and sources of food, so biodiversity decreases.

D Deforestation creates new habitats and sources of food, so biodiversity increases.

3. *Which of the following correctly links deforestation to the amount of CO<sub>2</sub> in the atmosphere?*

A As the amount of deforestation increases, the amount of carbon dioxide in the atmosphere increases.

B As the amount of deforestation increases, the amount of carbon dioxide in the atmosphere will remain constant.

C As the amount of deforestation increases, the amount of carbon dioxide in the atmosphere decreases.

D There is no correlation between deforestation and the amount of carbon dioxide in the atmosphere.

4. *Which of the following is not a major reason for deforestation?*

A To use land to rear livestock (e.g., cattle)

B To use land to grow crops for biofuel

C To use land to grow crops for food

D To use land to create marine habitats

5. *Which of the following is not a consequence of an increase in deforestation?*

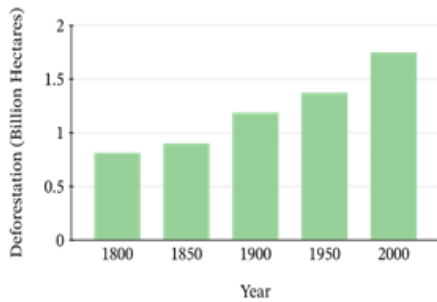
A More biodiversity due to the creation of new habitats

B Less biodiversity due to habitat destruction

C More carbon dioxide released into the atmosphere

D Less carbon dioxide removed from the atmosphere

6. *The graph provided shows the rate of global deforestation. Describe the trend shown.*



A As the years go by, the rate of global deforestation decreases.

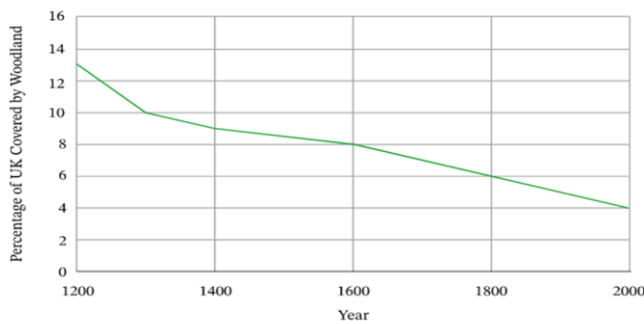
B As the years go by, the rate of global deforestation increases.

C There is no correlation between the years and the rate of deforestation.

7. The graph shows the changes in the percentage of the UK that was covered by woodland over time. Which of the following correctly describes the data shown in the graph?

A The percentage of the UK covered by woodland decreased exponentially between 1200 and 1400.

B The percentage of the UK covered by woodland was highest in 1600.



C The percentage of the UK covered by woodland has remained relatively constant since 1600.

D The percentage of the UK covered by woodland decreases by around 9% from 1200 to 2000.

8. Peat removed from peat bogs can be burnt as fuel. What is released when peat is burnt?

A Carbon dioxide

B Oxygen

C Aluminum oxide

D Nitrogen

9. The picture provided shows a peat bog. Why are peat bogs important for biodiversity?



- A Peat bogs provide a large amount of crops that are consumed by humans.
- B Peat bogs provide habitats for specially adapted species of plants and insects.
- C Peat bogs cover significantly more of the earth's surface than forests.
- D Peat bogs provide habitats for many animal species that are consumed by humans.

**Exercise 8.**

***Read and translate the following text into Ukrainian. Retell the text from the 1<sup>st</sup> person singular.***

**Death of an Ancient Tree**

The oldest tree in the world died one day in 1964. Its name was Prometheus, and Donald Currey cut it down. It was not only the oldest tree, but the oldest living thing ever recorded. Currey wasn't an un-caring logger or farmer making room for crops. He was a 30-year-old graduate student doing research into climate change throughout history.

Trees are windows into the past. By studying the spaces between the rings that form each year, we can learn something about the experience of each tree during that period of its life. Was it warmer or colder? Was it wetter or drier? In this way, trees are repositories of earth history.

Currey wasn't planning on killing any trees. He had a special drill to remove samples from trees without cutting them down. That was the plan, but his drill got stuck in the first tree that he found. This was an irreplaceable drill from Sweden, and without it, his research would have to stop. Currey didn't know what to do and went looking for help.



A local park ranger told him: «Don't worry, there are dozens of these trees in the park. We'll just cut it down and remove your drill». Neither Currey nor the park ranger knew that Prometheus was a special tree when they killed the oldest life form known on earth. At the time, they had no idea just how old it was.

After retrieving his drill, Currey took a look at the rings inside. Each ring corresponded to a year of the tree's life. By the end of the day, he had counted 1,000 years back in history. By the middle of the 2nd day, he had counted to

2,000 and he wasn't even half-way finished. By the end, he counted a grand total of 4,844 rings. This tree had lived to nearly 5,000 years.

Currey was horrified. He was responsible for killing the oldest living tree in the world. There was an uproar around the country and people called him a murderer. Currey was apparently so disturbed, he stopped studying trees or anything living for that matter. He spent the rest of his career studying salt flats.

Currey probably never let go of the past or forgive himself for what he had done. More than 20 years later, he was being interviewed by a TV reporter about his salt flat research, when he was asked, «Aren't you the Currey who cut down the oldest tree in the world?» Mid-interview, Currey turned his back and ran.

### ***Exercise 9.***

***Read the following statements and make up questions to the italicized words.***

1. Deforestation is the mass destruction of trees *in a forest*.
2. Clearing a large area of land converts it *to a non-forest use*.
3. *Logging* means simply the act of cutting down trees for the purpose of making timber.
4. Logging can lead *to deforestation* if carried out in an exploitative and unethical manner.
5. Forests are used in such a way as *to maintain their productivity, biodiversity and regeneration capacity*.
6. Replanting at least *as many trees as we cut* over a specific period of time is very important.
7. *In June 2021* Ukraine's President Volodymyr Zelensky declared that a billion extra trees would be planted within three years.
8. It was planned to reforest *a million* hectares in a decade.
9. *Up to 70%* of Ukraine's lands are used for farming, which is among the highest rates in Europe.
10. Many of Ukrainian lands were natural steppes that *were turned into fields*.
11. *Close to the capital* Kyiv lies a forest blooming with flowers.
12. There are 69 types of wild orchid in Ukraine that can survive only *in their natural habitat of Ukraine's steppes*.

### ***Exercise 10.***

***Consult any sources of information and answer the following questions.***

1. *Cutting of trees on a large scale is known as* .....
  - a. Deforestation
  - b. Reforestation
  - c. Afforestation
  - d. None of the above

2. Deforestation generally decreases the .....

- a. Soil erosion
- b. Global warming
- c. Drought
- d. Rainfall

3. Extensive planting of trees to increase the forest cover is known as .....

- a. Afforestation
- b. Deforestation
- c. Reforestation
- d. Social forestry

4. Which nation is most affected by deforestation?

- a. India
- b. Sri Lanka
- c. Honduras
- d. Canada

5. Which type of farming causes more amount of deforestation?

- a. Commercial farming
- b. Subsistence farming
- c. Dairy farming
- d. Mixed farming

6. Match the words correctly.

A	B
1. Deforestation	a. Urbanisation
2. Afforestation	b. Droughts
3. Natural cause of deforestation	c. Clearing or cutting trees
4. Man-made cause of deforestation	d. Planting trees

**Exercise 11.**

Follow the link <https://youtu.be/B5Fwl4P4EW8> to watch the video “The Tragedy of Deforestation” taken from BBC Earth. Make up a dialogue and introduce it with your partner.

**Exercise 12.**

Put the words into the right order.

- 1. severely / the / in / has / trade / war / disrupted / world / Ukraine / timber.
- 2. forest / the / caused / by / war / uncontrolled / Ukraine’s / make / fires / to / forests / harm.

3. 2030 / COP26 / in / than / 2021 / summit / more / 100 / world / in / leaders / promised / to / at / the / stop / deforestation / by / Glasgow.

4. a / major / of / viruses' / from / to / jump / is / habitat / often / humans / through / cause / loss / deforestation / wildlife.

5. access / acting / also / build / to / more / illegally / forests / which / to / leads / further / loggers / deforestation / roads.

6. deforestation / stopping / before / it / a / critical / point / will / a / key / in / avoiding / the / role / next / reaches / zoonotic / play / pandemic.

### ***Exercise 13.***

***Read the following text and fill in the gaps with the words from the word-box.***

*Impact, uprooted, increasing, invasion, through, degradation, logging, loss, wartime, illegally, artificial, forest.*

## **War's Invisible Consequences for Ukrainian Forests**

During the war, many processes in Ukraine have remained invisible to the public. One of these areas is 1) ..... policy. Today, unsustainable forest management is taking place across the country. In general, the number of forests is decreasing, logging volumes are 2) ....., and the procedures for managing logging are weakening significantly. None of this has anything to do with the direct 3) ..... of hostilities, but it is a significant problem for the country and needs to be addressed during 4) .....

Like most countries around the world, Ukraine had its fair share of forestry challenges even prior to Russia's full-scale 5) ..... in 2022. There were two main threats.

The first is forest 6) ..... due to unsustainable forest management. Every year, Ukraine loses natural forests, which are then replaced by 7) ..... plantings vulnerable to climate change and poor in terms of biodiversity. The reason for this is outdated approaches to forest management based on the practice of "mastering nature." The problem is further exacerbated by illegal 8) ..... by the forest managers themselves.

The second threat is deforestation. There are no precise estimates of the annual irreplaceable 9) ..... of forests, but such losses occur continuously. Forests are 10) ..... privatized for development. Roads, gas pipelines, and power lines are laid 11) ..... forests. Naturally afforested agricultural lands are 12) ..... to clear land for agriculture. A unique reason is found each time, but every year the number of forests in Ukraine grows smaller.

*(By Yehor Hrynyk, Ukrainian Nature Conservation Group,  
15 November, 2022)*

### ***Exercise 14.***

#### ***Read and translate the following sentences into English***

1. Збезлісення є процесом знищення лісу, яке може бути досягнуто як навмисною вирубкою людиною, так і діяльністю кислотного дощу або урагану.

2. Ліси, що знаходяться на екваторі, стають сховищами ендемічних видів тварин і рослин, вони зберігають приблизно половину видів усього світу.

3. Однією з головних причин збезлісення є вирубка лісів для створення паперу і меблів, каучуку і всім відомого пальмового масла.

4. Частина масиву лісу в Карпатах була втрачена внаслідок пожеж і лісових хвороб.

5. Частину дерев зрубали на продаж, і не завжди ці рубки були законними.

6. Масові рубки лісу небезпечні тим, що підсилюють паводки, адже дерева утримують і вбирають воду під час дощів і танення снігу.

7. Амазонський ліс активно вирубують у Бразилії, після знищення 25 % лісу він вже не зможе підтримувати себе і «помре».

8. Внаслідок вирубки лісів не залишається нічого, що могло б зберегти цілісність ґрунту, а це підвищує ризик виникнення вітрової та водної ерозії.

9. Масове вирубування лісів є однією з причин частих повеней і паводків, зокрема у гірських районах.

10. Внаслідок незаконного переміщення деревини втрати державних лісогосподарських підприємств складають 0,5 млрд грн щорічно.

11. Обсяги вирубувань не можуть наповнити західний ринок, який, зберігаючи свої високопродуктивні ліси, скуповує за безцінь високоякісну деревину Карпат.

12. Дереву називають легенями Землі, які становлять єдину екосистему, що впливає на життя різних видів флори, фауни, на ґрунт, атмосферу, водний режим.

## UNIT 6

### WATER POLLUTION



#### ***Exercise 1.***

***Before reading the text about water pollution let's discuss the following questions.***

1. How does water get to your home?
2. How does a river or lake become polluted?
3. When you hear the words «water pollution», describe what your mind sees: what colors, what objects, what motions?
4. What is water pollution?
5. Where is the most water pollution found?
6. What does water pollution come from?
7. How can we stop water pollution?
8. What is worse air pollution or water pollution?

#### ***Exercise 2.***

***Learn the vocabulary.***

agricultural wastes – сільськогосподарські відходи

chemical fertilizers – хімічні добрива

contaminated water – забруднена вода

hazardous substances – небезпечні речовини

industrial waste – промислові відходи

mine drainage – дренаж шахти

municipal wastes – міські відходи

natural decomposition – природне розкладання

sewage disposal – утилізації стічних вод

thermal pollution – теплове забруднення

water pollution – забруднення води



### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

## **Water Pollution, Sources and Types**

Water pollution occurs when harmful substances – often chemicals or microorganisms – contaminate a stream, river, lake, ocean, aquifer, or other body of water, degrading water quality and rendering it toxic to humans or the environment.

Travellers to foreign countries are often warned against drinking anything but sterilized liquids sealed in bottles. Contaminated water is a major problem in many industrialized societies. Over the years, we have managed to pollute virtually every major body of water in the nation. Rivers, streams, and lakes have been fouled with organic and



inorganic chemical wastes. Public water supplies and even private wells have been found to contain substances linked with cancer. Water, like air, is a prerequisite of life. We drink it, bathe in it, use it for recreational purposes, eat many of the creatures that live in it, and rely on it for use in agriculture and industry. Water pollution constitutes a threat that is just as serious as the abuse of the earth's air.

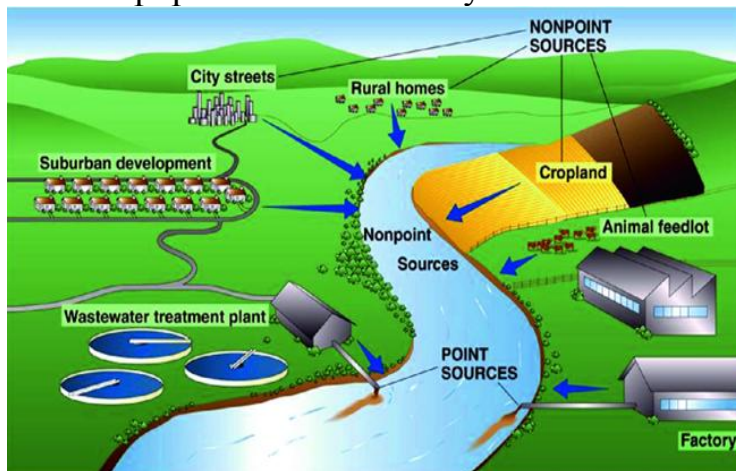
There is a distinct possibility that we could run out of usable water, not only because of pollution but also because of the increasing demand for fresh water. In addition, according to biologist Barry Commoner, pollution of our surface waters may expose human beings to a host of new and unaccustomed diseases for which immunity may be lacking. Many pollutants have been found in our water, and there is good reason to believe that many others have not yet been discovered. How these pollutants affect one another is unknown.

One of the major contaminants is industrial waste. Overall, industry accounts for 60 percent of this society's water pollution. Over 300,000 factories discharge water containing wastes, many of which are known to be toxic. Over half the wastes come from the paper, organic chemicals, steel and petroleum industries.

Thermal pollution is also one of the most serious types of water pollution, and the waste heat problem is expected to grow much worse in the future. The main source of thermal pollution is the electric power industry, which uses great amounts of water for coolant purposes. The used water is then poured back into rivers, streams, and lakes, raising their temperature and adversely affecting

aquatic life.

Municipal wastes make up about 25 percent of all water pollution. The treatment of wastes generated in homes, commercial establishments, and industry remains at a primitive level in most urban areas. Only about half of the nation's population is served by safe means of sewage disposal.



Agricultural wastes include animal and chemical wastes. Each year animals produce the same amount of organic wastes as do 2 billion people. Increasingly, agricultural animals have been reared in centralized feedlots, where their wastes become highly concentrated and are

impervious to natural decomposition.

Elements of these wastes then seep into underground water channels and surface waters. A similar process occurs as a consequence of the heavy use of chemical fertilizers and pesticides in farm areas. Our waters are also being widely contaminated by land erosion and sediments. Oil and other hazardous substances are frequently spilled by accident or on purpose in water ways. And mine drainage (particularly from strip mining) fills streams and rivers with toxic metals and acids.

#### ***Exercise 4.***

***Answer the following questions.***

1. How can one define the term “water pollution”?
2. Name the main sources of water pollution.
3. What is one of the major water contaminants?
4. What are the most serious types of water pollution?
5. What do most wastes come from?
6. Is there a distinct possibility that we could run out of usable water?
7. What is the main source of thermal pollution?
8. Why does the treatment of wastes generated in homes, commercial establishments and industry remain at a primitive level in most urban areas?
9. What do agricultural wastes include?
10. Where do agricultural animals wastes become highly concentrated and decomposed?
11. What does the heavy use of chemical fertilizers and pesticides in farm areas lead to?
12. Our waters are also being widely contaminated by land erosion and sediments, aren't they?

**Exercise 5.**

**Read the following text and choose the right answer to the given statements below.**

**Economic Growth and the Environment**

By the mid-twentieth century the air over urban and industrial centers had become foul and the waters filthy.

The costs of cleaning up the damage caused by pollution do not naturally fall on those who cause it. Though many companies acting as good citizens make efforts to protect the environment, there is little economic incentive for them to do so.

Modern technology produces massive amounts of wastes. Burning fossil fuel in cars and factories releases pollutants into the air. Then dust and moisture combine in the atmosphere to form acids in clouds, and eventually there is an acid rainfall or snowfall. The results are deadly. Acid rain kills fish and plants in lakes. It also builds up in the soil and damages crops. It wears away building surfaces. Blown by winds, the acid rain may fall far from the source of pollution. Acid rain caused by pollutants in our country may fall on other countries. In fact, studies indicate that about half the acid rainfall in Canada may originate in the United States.

Water is considered polluted when it cannot be used for its intended purpose, such as drinking, recreation, farming, or manufacturing. Pesticides and chemical fertilizers used by farmers and home owners pollute streams, rivers, and ground water when they are transported by rain-water runoff.

Government efforts to control pollution have taken three forms: direct regulation, effluent fees and tax credits.

*Direct regulation* refers to government rules to protect the environment. The prohibition of burning waste in incinerators, or the dumping of sewage in a river, and the banning of a pesticide (such as DDT) are examples of this form of pollution control. Those who fail to obey government regulations are subject to fine, imprisonment, or both.

*Effluent fees* are charges levied on polluters for discharging waste. For example, a factory that pumps its waste into the atmosphere or a nearby stream will be charged on the basis of the quantity of waste discharged.

*Tax credits* enable firms to reduce their taxes in exchange for investing in equipment that will enable them to reduce the amount of pollution they generate

1. The expression «massive amounts of wastes» in the first paragraph is closest to meaning .....

- a) few wastes
- b) a lot of wastes
- c) the quantity of waste

2. What type of pollution is not mentioned in the text .....

- a) air pollution

- b) water pollution
- c) noise pollution

3. How many forms have government efforts to control pollution taken?

- a) 2
- b) 3
- c) 4

4. What does "they" refer to in the fourth paragraph?

- a) streams, rivers and ground water
- b) farmers and home owners
- c) pesticides and chemical fertilizers

5. The purpose of this text is to .....

- a) apologize
- b) complain
- c) inform

**Exercise 6.**

**Match the words from column A with their Ukrainian equivalents from column B.**

A	B
1 agricultural wastes	А небезпечні речовини
2 electric power industry	В ерозія ґрунту
3 municipal wastes	С забруднення води
4 land erosion	Д токсичні метали
5 inorganic chemical wastes	Е безпечні засоби
6 natural decomposition	Ф хімічні добрива
7 industrial waste	Г сільськогосподарські відходи
8 safe means	Н громадське водопостачання
9 thermal pollution	І промислові відходи
10 immunity	Ж органічні хімічні відходи
11 fresh water	К загроза
12 contaminated water	Л теплове забруднення
13 the treatment of wastes	М неорганічні хімічні відходи
14 toxic metals	Н прісна вода
15 hazardous substances	О утилізації стічних вод
16 mine drainage	Р промислові відходи
17 organic chemical wastes	Q переробка відходів
18 sewage disposal	Р забруднена вода
19 threat	С імунітет
20 chemical fertilizers	Т міські відходи
21 public water supplies	U електроенергетика
22 water pollution	V дренаж шахти

### *Exercise 7.*

*Follow the link <https://www.unep.org/news-and-stories/story/how-sierra-leone-taking-water-pollution> to watch the video about water pollution. Make up a dialogue and introduce it with your partner.*

### *Exercise 8.*

*Before you read the following text look at the title and make predictions about what you expect the text to be about. Read and translate the text into Ukrainian.*

## **The Green Solution**

Toxic chemicals can now be found in trace amounts in virtually all creatures and in all environments. The threat grows daily. Toxic chemicals can travel great distances, exist for many years, and grow more concentrated in living things.

Roughly 87,000 man-made chemicals are now in use. Virtually none has been adequately tested for the threats they may pose to wildlife and humans.

The solution requires actions by governments, corporations and individuals.

Here are some actions you can take to reduce your consumption and use of toxic chemicals:

- Buy organically grown fruit and vegetables, cotton clothing and other goods.
- Stop using pesticides. Green your yard using natural products.
- Use traps, parasites, and natural predators such as ladybugs.
- Use disease and pest-resistant plants.
- Use compost and mulch to improve soil health and reduce the need for pesticides and fertilizers.
- Include in your garden such insect-repelling plants as basil, chives, mint, marigolds and chrysanthemums.
- Use environmentally friendly cleaning products in your home.
- Don't buy or use chlorine bleach.
- Look for the words «biodegradable» and «non-toxic» on the label.
- Avoid products containing EDTA, NTA, phosphates, chlorine bleach or sodium hypochlorite.



**Exercise 9.**

**Give definitions to the following words, matching columns A and B.**

<b>A</b>	<b>B</b>
1. biodegradable products	a) a tropical forest with tall trees in rainy parts of the world.
2. a pollutant	b) the science of how living things are related to the environment.
3. a habitat	c) materials that can be destroyed biologically.
4. a rainforest	d) a place where garbage, trash, litter are stored.
5. ecology	e) a substance that pollute the environment.
6. a land fill	f) a natural home of a plant or an animal.

**Exercise 10.**

**Complete the sentences below with one of the following words in the word-box.**

*Destruction, carbon dioxide, population, water, chemical fertilizers, incurable diseases, extinction, ozone layer, pollution control, radiation.*

1. The words ..... doubled.
2. Mankind is driving many species to .....
3. Trees can help because they absorb .....
4. There's a high rate of ..... in the industrial regions.
5. Levels of lead in air can be reduced by .....
6. Pollution is making a hole in ..... bigger.
7. The Dnipro and the Dniester are the most polluted ..... bodies in Ukraine.
8. People were exposed to the deadly level of ..... in Chornobyl zone before the evacuation.
9. Overfishing in seas and oceans manifests itself in ..... of natural resources.
10. About half of the ..... used in the field in Ukraine are washed off into the river.

***Exercise 11.***

***Read the following text and translate it into Ukrainian. Make up 12 different questions.***

**Environmental Specialists in Green Management**

Companies that take the environment seriously, try to change not only their technology, but also the way they run themselves. Big profitable companies find it easier to be green than small ones because they can afford large investments in cleaner technology. Being kind to environment becomes profitable, as the customers take more interest in their suppliers – they want the products they consume not to be hazardous. More strict laws and certification standards are being approved by governmental and international bodies, and it is less expensive for companies to follow their regulations than not.

Improvements in management are more and more connected with green ideas. Managers are taught to safeguard the environment – it is a major part of training courses considered essential for a company's success. Great importance is attached not only to the academic and practical training of employees, but they are also taught how to protect environment and be market-driven in their tomorrow realities.



The instructors are specialists who train their students how to make environmental protection part of their everyday work – from plants and production processes to finished products. In Germany, for instance, more than 8,000 employees attend these environmental protection seminars every year. In the next four years most of their workforce will receive this training. After all, the company's commitment to the environment is ultimately shaped by the environmental conscientiousness of its employees.

It is a company's culture to operate the most exacting standards and the administration officials want to ensure that their approach to environmental management is similarly rigorous and professional. They believe their environmental specialists will ensure their plants comply with the demands of the Environmental Protection Act. Their projects will complement the wider scope of the role which will include reduction of emission streams, recycling, liaison with certifying authorities, life cycle analysis, environmental monitoring, toxic waste management and energy management. Such demands brought to life new positions and activities, for example, those of environmental engineer, a health officer, a disposal system analyst, etc.

### ***Exercise 12.***

***Read the text «Environmental Specialists in Green Management» in exercise 11 and decide whether the following statements are true (T) or false (F). Correct the false ones.***

1. Big profitable companies find it easier to be green than small ones because they can afford large investments in cleaner technology.
2. More strict laws and certification standards are being approved by governmental and international bodies, and it is more expensive for companies to follow their regulations than not.
3. Improvements in management are more and more connected with green ideas.
4. Great importance is attached to the academic and practical training of employees.
5. The instructors are specialists who train their students how to make environmental protection part of their everyday work.
6. Customers want to ensure that their approach to environmental management is similarly rigorous and professional.
7. Such demands brought to life conventional positions and activities, for example, those of environmental engineer, a health officer, a disposal system analyst, etc.
8. Companies try to change only their technology.

### ***Exercise 13.***

***Read the text about saving water and decide whether the statements below are true (T) or false (F), discuss them with your partner.***

Up to 2,700 litres of water are needed to produce one cotton T-shirt, and up to 12,760 litres for one smartphone! Coal, gas and nuclear power plants all use water to produce our energy. By 2050, the amount of water we use is predicted to be 55 per cent more than in 2000!



Seven ways to save water are mentioned below:

- Turn off the tap. Don't leave the water running when you're not using it, for example when you're brushing your teeth.
- Don't play with water. It's fun but it wastes a lot of water.
- Take a shower instead of a bath. Baths use more water than showers. But try not to spend more than five minutes in the shower!
- Water plants carefully. Don't water them when the sun is strong. Morning or evening's better.



- Don't waste food. If you make a meal, don't make too much, or eat the rest the next day!
- Don't waste products. Reduce, reuse, recycle instead! Reduce the number of plastic bags you get. Reuse things like boxes and bottles. Recycle instead of throwing in the bin!
- Don't waste energy. For example, turn off lights when you leave a room. What other ways can you think of?

1. Water is necessary for our everyday lives.
2. We can use most of the world's water.
3. The number of people in the world's getting smaller.
4. It's important to start saving water now.
5. Up to 270 litres of water are needed to make a T-shirt.
6. Up to 12,760 litres of water are needed to make a smartphone.
7. In 2050 we'll use more water than today.
8. Showers use more water than baths.

#### ***Exercise 14.***

***Translate the following sentences into English.***

1. Забруднена вода є серйозною проблемою в усіх країнах світу.
2. Протягом багатьох років нам вдалося забруднити практично всі великі водойми.
3. Річки, струмки та озера були забруднені органічними та неорганічними хімічними відходами.
4. Вода, як і повітря, є необхідною умовою життя.
5. Ми можемо залишитися без придатної для використання води не лише через забруднення, але й через зростання попиту на прісну воду.
6. Одним із головних забруднювачів є промислові відходи.
7. Загалом на промисловість припадає 60 відсотків забруднення води суспільством.
8. Понад 300 000 заводів скидають воду, що містить відходи, багато з яких, є токсичними.
9. Більше половини відходів утворюються з паперу, органічної хімії, металургійної, сталеливарої та нафтової промисловості.
10. Основним джерелом теплового забруднення є електроенергетика, яка використовує для теплоносія велику кількість води.
11. Потім використана вода зливається назад у річки, струмки та озера, підвищуючи їх температуру та негативно впливаючи на водне життя.
12. Міські відходи становлять близько 25 відсотків усіх забруднень води.

**UNIT 7**  
**POLLUTION EFFECTS ON MARINE LIFE**



**Exercise 1.**

**Look at the words in the word-box and match them with their definitions.**

*Ocean, gulf, maritime, current, flow, salinity.*

- 1) a verb describing the movement of water
- 2) a large expanse of water
- 3) a noun meaning the movement of water
- 4) an adjective relating to navigation, shipping or the sea
- 5) a deep place where there are strong ocean currents
- 6) the amount of salt that water contains

**Exercise 2.**

**Learn the vocabulary.**

bleak – похмурий

cartilage ['kɑ:təlɪdʒ] – хрящ

cephalopod ['sefələˌpɑːd] – головоногий

cephalopoda [sefələˌpɑːdə] – головоногі, цефалоподи

crevice ['krevis] – тріщина, ущелина, щілина

crustacean [kreˈsteɪʃ(ə)n] – ракоподібне

encompass [ɪnˈkempəs] – охоплювати

environs [ˈenvɪrənz, ɪnˈvaɪ(ə)rənz] – оточення

exoskeleton [ˈeksəˌskelɪtn] – екзоскелет

font – купіль

invertebrate – безхребетний

minuscule [ˈmɪnəskjuːl] – мінускульний, дуже маленький

multifarious [mɛlˈtɪˈfe(ə)rɪəs] – різноманітний

quintessential [kwinti'senʃ(ə)l] – який є квінтесенцією, основний, найбільш істотний

shellfish (the singular / the plural form) – молюск, ракоподібне

shrimp (also used as the plural form) – дрібна креветка

specimen(s) ['spesimən] – зразок, екземпляр

squid(s) (also used as the plural form) – кальмар

sterile ['sterail] – безплідний, нездатний до дітородіння, стерильний

wriggle ['rig(ə)l] – звиватися, вигин, вигинання (тіл)

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

## **We Need to Protect Marine Life before It Disappears**

Seas and oceans cover 71 percent of the world's surface and provide diverse habitats for millions of unique species. From minuscule plankton and shrimps to the enormous shapes of blue whales and giant squid, marine life takes thousands of brilliant forms. Although shallow, coastal waters, which profit from extra sunlight, tend to be more fertile zones for life than the deep deserts of the open ocean, life can be found in even the bleakest crevices of the sea. Indeed, the oceans are the font of all life on earth, from which our distant ancestors wriggled onto the shore some 500 million years ago. Yet however sea-life is under immense pressure from plastic, rising temperatures, acidification, fishing, and more, and sterile seas have enormous implications for the existence of human life on the planet.

### *What Is Marine Life?*

Marine life encompasses all animal life that exists in saltwater, in the planet's seas and oceans. Freshwater life, that inhabits rivers and lakes, is categorized differently; "marine" specifically denotes sea-dwelling creatures.

### *What Is the Study of Marine Life?*

The study of marine life is called marine biology. Marine biologists are at the frontlines of both the scientific and conservationist communities. Their duties include collecting organism specimens at sea, crunching data, and experimenting in the lab. Areas of research are also multifarious but might include the study of animal migration patterns, underwater photosynthesis, or investigating the impact of human pollution, for example on coral reefs.

### *What Are the Types of Marine Life?*

The saltwater environs which make up the majority of the Earth are home to diverse species. Members of almost all classes of creatures, from mammals and mollusks to birds and reptiles, make the sea their home. *Cephalopods, crustaceans and shellfish* are a varied group of organisms that inhabit different roles within marine ecosystems.





*Cephalopods* are a family of mollusks which include octopus, squid, cuttlefish and nautili.

*Crustaceans* are a family of creatures that include crabs, lobsters, shrimp and prawns.

*Shellfish* is a colloquial term that incorporates crustaceans, which have thick exoskeletons, alongside various mollusks with shells such as bivalves like mussels, clams, oysters, cockles and scallops.



*Corals* are *invertebrate marine creatures* that tend to live in large colonies which form reefs. Other marine invertebrates include sponges, starfishes and anemones.

There are numerous *mammals* in the oceans, some of which hang closer to shore like seals and sea lions whilst others can travel vast distances, like dolphins, whales and orcas.

There are 20,000 different species of *fish* in our planet's oceans. From tuna and marlin to clownfish, barracudas and guppies they are the quintessential water creatures. *Sharks and rays* are cartilaginous fish, whose skeletons are primarily composed of cartilage.

*Sea turtles* are the most iconic marine *reptile* species, although other marine reptiles include sea snakes, marine iguanas and saltwater crocodiles.

*Seabirds* fish the coasts of various continents and include a wide array of creatures from gulls to albatrosses, penguins, cormorants and puffins.

Although the oceans make up 71 percent of the earth's surface they only contain 15 percent of the Earth's species; 80 percent of species dwell on land, and the remaining 5 percent in freshwater. The reasons for this are varied, including a lack of diversity in the architecture of ocean environments as opposed to the various geographies of land like deserts, mountains, forests, grasslands, and so on. There are still a predicted 2 million species in the oceans, and only 228,450 are known to humanity.

(Adapted from <https://sentientmedia.org/marine-life/>,  
March 3, 2021)

#### ***Exercise 4.***

***Read the text «We Need to Protect Marine Life before It Disappears» in exercise 3 and decide whether the following statements are true (T) or false (F). Correct the false ones.***

1. Sea-life is under tiny pressure from rising temperatures and plastic.

2. Only about two hundred thousand ocean species are known to the people.

3. Marine life specifically denotes river-dwelling creatures.

4. Oceans contain only fifteen percent of the Earth's species.

5. Marine zoology is the study of marine life.

6. Starfishes refer to invertebrate marine creatures.

7. The duties of marine biologists include collecting organism specimens at sea.

8. Coastal waters profit from extra sunlight.

9. Cephalopods are a family of mollusks which include cuttlefish.

10. Sea turtles are the most iconic marine reptile species whose skeletons are primarily composed of cartilage.

11. Prawns belong to the family of cephalopods.

12. Such ocean mammals like penguins usually hang closer to shore.



### ***Exercise 5.***

***Read the following text and choose the proper answer to the statements below.***

#### *Ocean Pollution*

People are treating the oceans like trash bins: around 80 percent of marine litter originates on land, and most of that is plastic. Plastic that pollutes our oceans and waterways has severe impacts on our environment and our economy. Seabirds, whales and other marine life are eating plastic pollution and dying. Scientists are investigating the long-term impacts of toxic pollutants absorbed, transported, and consumed by fish and other marine life, including the deadly effects on human health.

#### *Negative Impacts*

Plastic pollution affects every waterway, sea and ocean in the world. When we damage our water systems, we are putting our own well-being at risk. This pollution also has huge costs for taxpayers and local governments that must clean this trash off of beaches and streets to protect public health, prevent flooding from trash-blocked storm drains, and avoid lost tourism revenue from filthy beaches.

#### *Solutions*

..... the most effective way to stop plastic pollution in our oceans is to make sure it never reaches the water. We all need to recycle and producers of single use plastic packaging need to do more too.

1. *What is meant by the words «People are treating the oceans like trash bins»?*

- a) we don't understand the ocean.
- b) we don't respect the ocean.
- c) the ocean will destroy us.

2. *What is NOT mentioned as an effect of sea pollution?*

- a) the overpopulation of the sea
- b) the poisoning of human beings
- c) the waste eaten by sea creatures

3. *How does trash cause flooding?*

- a) by plugging up drains
- b) by blocking beaches
- c) by discouraging tourism

4. *The phrase which best fits in the gap in the last paragraph is*

- a) for the time being.
- b) to begin with.
- c) despite this

5. *Money lost to businesses is mentioned in*

- a) paragraph one
- b) paragraph two
- c) paragraph three

6. *A specific measure against pollution is mentioned in .....*

- a) paragraph one
- b) paragraph two
- c) paragraph three

### ***Exercise 6.***

***Choose your role A or role B, make up a dialogue with your partner and introduce it to the class.***

#### ***Role A***

You live in an area near the beach and have invited your friends to come join you for a nice day at the beach. You and your friends brought food along with plastic cups, sporks, paper plates and plastic water containers. After enjoying the beach, you decided it's time to pack up and go home. You gathered the trash, but since the garbage bin is situated far from your table you decided to throw it to the sea instead.

#### ***Role B***

You are an ambassador of Greenpeace, an environmental organization, and you see a group of beachgoers throwing their leftovers and bags of trash to the

sea. You are horrified by what you see and approach the group to let them know what you think!

**Exercise 7.**

**Match the words meaning living components of the sea from column A with their definitions from column B.**

<b>A</b>	<b>B</b>
1) nekton	a) are organisms that make their own food using sunlight e.g. plants.
2) benthos	b) is when toxins and poisons are passed from one organism to another along the food chain, larger amounts are found to accumulate in the flesh of secondary and tertiary consumers e.g. barracuda, groupers.
3) pelagic	c) are organisms that feed on producers or other consumers, they cannot make their own food e.g. shark, mackerel.
4) food chain	d) refers to the body of water from the bottom to the top, includes animals that swim freely in this area, e.g. sharks, bony fish, turtles, dolphins, whales, squid.
5) feed web	e) are organisms which breakdown dead plants and animals and waste products into chemical compounds that can be used by other living organisms.
6) photic zone	f) results from putting all the food chains of an area together.
7) bioaccumulation	g) a linear representation of who eats who where arrows indicate the direction of biomass flow.
8) producer	h) refers to those animals of the nekton which live mostly in the middle and upper layers.
9) consumer	i) refers to the bottom of the ocean and anything living in or on the bottom is benthic including scallops, worms, crabs, corals.
10) decomposer	j) is the zone where penetration of sunlight is sufficient to allow phytoplankton to carry out photosynthesis.

**Exercise 8.**

**Read and translate the following text into Ukrainian.**

**A War in the Black Sea and Its Effects on Marine Environment**

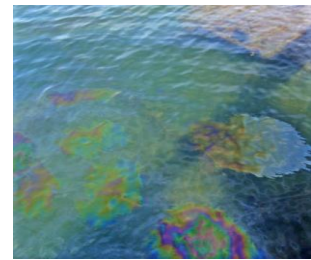
Due to the war between Russia and Ukraine, the safety of sea, food, biodiversity and environment in the Black Sea are in danger.

In fact, a war occurring in a semi-closed sea like the Black Sea affects the wildlife negatively in many ways.

The destruction done to the ecosystem by flammable, caustic, toxic, radioactive and explosive ammunition used in this war which got mixed with soil, water and then sea resulting from frequent bombings.

Nobody knows the definite number of mines dropped, broke off or dragged to the Black Sea due to the war. Magnitude of the damage on the marine ecosystem and species during the detonation of the mines found in Turkey and Romania is unknown. How many individuals of which species got killed and the existence of an environmental standard during the detonation of these are also unknown.

The amount of petrol leaked from the sunken ships which were hit by a missile and sunk at Mariupol offshore and the level of planning for immediate intervention are unknown. The poisonous gasses released to the atmosphere due to these ships will later reach the land or sea again by rainfall.



Wetlands and biosphere reserves in the Sea of Azov, Danube Delta and Gulf of Odessa reside within the migration destinations of birds. Endangering of species that choose these regions for breeding, feeding, migrating and laying eggs where bombings and gunshots occur daily is inevitable.



On the other hand, the Gulf of Odessa where tens of military ships reside, manoeuvre, get set on fire and ballistic missiles drop in is a feeding ground for coastal fish species as well as dolphins. Besides, destruction of endangered red algae (Phyllophora) which provide living grounds for many marine species in this region and decrease rapidly in the Black Sea is a source of concern for biodiversity.

Along with marine pollution, ship noise and low frequency sonars are known to be a serious threat to the marine species, especially to dolphins, which utilize underwater sounds actively to feed and navigate.



**Exercise 9.**

**Put the words into the right order.**

1. of entangled / sea / and / killed / each / turtles / year / after / getting / are / in / thousands / seals / plastic.

2. makes / plastic / 80% / all / from / marine / up / debris / deep-sea / found / surface / waters / to / of / bottoms.

3. marine / most / die / starvation / as / their / of / stomachs / filled / with / become / inhabitants / plastic.

4. the / oil / may / into / seabird / gets / feathers / they / not / able / to / be / fly / or / their / feed / when / birdies.

5. trash / you / up / more / and / properly / pick / dispose / of / less / the / waste / into / goes / our / the / oceans.

6. dead / was / on / the / found / beach / with / belly / whale / a / full / of / his / plastic.

**Exercise 10.**

**Print the grid with the letters. Search for 15 words / two-word terms hidden within the grid. Words can be written in any direction including backwards and along diagonals.**

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

**Exercise 11.**

**Read the following statements about marine environment and choose the proper answer.**

1. Which of the following are the aquatic resources? Choose three of the options below.

- a) mangrove
- b) coral reefs
- c) lake
- d) minerals
- e) fossil energy

2. 97.5 % of the earth's water is .....

- a) salty
- b) freshwater

3. Most of coral reefs can be found in .....

- a) warm ocean
- b) cold ocean

4. A marine colorful invertebrate animal made of calcium carbonate is

.....

- a) tuna fish
- b) lobster
- c) coral reefs
- d) shrimps

5. Below are the value of Coral reefs, except .....

- a) as marine food resource
- b) as the coastal protection from wave
- c) as source of medicine for cancer
- d) as oxygen supplier

6. A series of coral island that form a circular shape surrounding a central lagoon is called .....

- a) barrier reefs
- b) atoll reefs
- c) fringing reefs
- d) none of the above



7. Reefs which are separated from the main coast by a deep channel or lagoon mean .....

- a) barrier reefs
- b) atoll reefs
- c) fringing reefs
- d) none of the above

8. *A group of trees which live along the coast is .....*

- a) tropical rainforest
- b) deciduous forest
- c) mangrove forest
- d) savana grassland

9. *Which of the following is not the benefit of mangrove forest?*

- a) as the habitat of marine animals
- b) as the protection of sea water abrasion
- c) as landslide prevention
- d) as food source for marine animals

10. *Indonesia has a great number of sustainable potential fishery especially for .....*

- a) crustacean (shrimp, lobster)
- b) tuna fish
- c) shellfish
- d) coral reefs

***Exercise 12.***

***Read the following statements and make up questions to the italicized words.***

1. Chemical contamination means the runoff of chemicals into waterways that ultimately flow *into the ocean*.

2. The *negative* effects on the environment caused by algal blooms hurt local fishing.

3. *Marine trash* encompasses manufactured products that end up in the ocean.

4. Common types of marine debris include *various plastic items* like shopping bags, beverage bottles, cigarette butts, bottle caps, food wrappers.

5. Plastic waste is particularly problematic as a pollutant *because* it is so long-lasting.



6. Plastic items can take *hundreds of years* to decompose.
7. Microplastics are less than *five millimeters* (0.2 inches) in diameter.
8. Small organisms consuming microplastics are eaten by *larger animals*.
9. The fishing nets cause *injuries* and keep seals from rising to the surface for air.
10. Rangers rescued about *10,000* turtles that were entangled in nets over the last decade.
11. Tragically, the big ships have killed at least 7 million *dolphins* in the process of catching tuna.
12. Turtles swim into nets often *unable to detect them* by sight or sonar.

***Exercise 13.***

***Read the information below and follow the link <https://www.youtube.com/watch?v=yUGSb2LiZSg> to watch the video “Marine Pollution Threatens the Caribbean Sea”. Make up a dialogue and introduce it with your partner.***

The dramatic increase in marine pollution in recent years – from plastic and solid waste to runoff and hazardous chemicals – threatens the communities that rely on the Caribbean Sea. A new World Bank report examines how marine pollution affects the Caribbean region and offers solutions to transition to a blue economy that will help better manage the countries’ marine resources and boost growth in the region. Fourteen Caribbean countries have recently banned single-use plastic in an effort to clean up their sea. Learn more on what needs to be done to take on marine pollution.

***Exercise 14.***

***Read the following text and translate it into Ukrainian. Make up 12 different questions in writing. Retell the text in English.***

### **Effects of Ocean Acidification**

Industrialisation activities and carbon emissions have made our oceans more acidic. Marine life is directly affected by this acidification, which has been constantly increasing at rapid rates for the past decades. Ocean acidification refers to a reduction in the pH of the ocean over an extended period of time, caused primarily by uptake of carbon dioxide (CO<sub>2</sub>) from the atmosphere.

***1. Increase in the carbon dioxide concentration in the ocean***

Reactions between carbon dioxide and water molecules form more carbonic acid. When it rains on the water masses, the level of carbon concentration rises further and further instead of subsiding as more carbon dioxide is absorbed to form more carbonic acid. This may lead to suffocation and even death of marine creatures.

## 2. Loss of aquatic life

The seawater supports life at its normal conditions. Nevertheless, when the pH level is lowered or raised, various types of fish, mammals such as whales, sharks and many more are affected. This leads to disappearance or death of some organisms in the aquatic ecological environment.

## 3. Food shortage

When fish die, humans who depend on them or food and livelihood are hit by the socio-economic problems. This process also contributes to acidic waters, which have a more devastating effect on agricultural production. Acidic water results in an increase in soil acidity that makes it impossible for the cultivation and production of certain crops. This leads to low production and starvation.

## 4. Food web interference

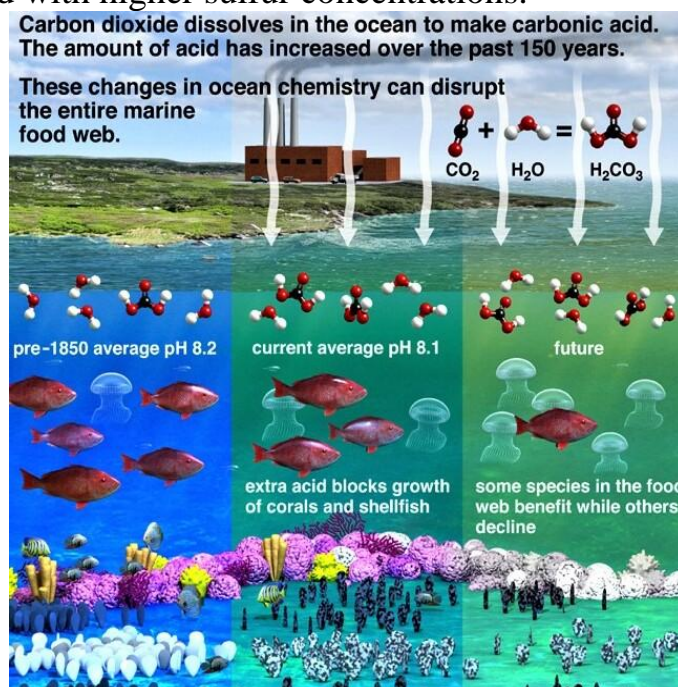
Ocean acidification leads to the death and disappearance of some plants and animals in the sea. When some organisms become extinct, their dependents are also threatened because they have nothing to feed on.

## 5. Impact on human health

Humans depend on water for various purposes. When the ocean water acidity gets higher, the consumers or the users of such water are living in a perilous situation. Diseases such as cancers can easily be transmitted to humans when they consume fish intoxicated with higher sulfur concentrations.

## 6. Impact on the reefs

As more carbon dioxide is absorbed into the oceans, it bonds to form carbonic acid. The acid then produces hydrogen ion and bicarbonate ion and the hydrogen ion bonds with free carbonate ions in the ocean to form other bicarbonate products. The problem with this reaction is that marine organisms possessing shells (corals, crustaceans, molluscs) need the carbonate ions to make calcium carbonate



shells and skeletons. Thus, the more dissolved carbon dioxide exists in the ocean, the less free carbonate ions are accessible for forming calcium carbonate shells and skeletons.

## 7. Impact on the open ocean planktonic ecosystem

Planktonic ecosystem in the oceans is not definite, it varies from place to place and also from ocean to ocean. In fact, it is the phytoplankton that forms the basis of the marine ecosystem. The phytoplankton carries out photosynthesis

and thus begins the chain of the marine ecosystems. So, if somehow, their photosynthesis faces a problem, the entire marine ecosystem suffers.

#### *8. Coastal ecosystems are affected*

While a little bit of acidity might help in the better growth of the plants, too much acidity could really be detrimental for their health. Acidification also decreases the productiveness of the organisms found in the coastal areas. Their death rates might increase too and this might then lead to the extinction of particular species.

#### *9. High latitude oceans are at a risk*

The oceans located in the higher latitudes are highly productive. The Southern and the Arctic oceans are the most productive and the most exploited oceans, this hampers the ecosystem of these oceans. Besides as the problem of acidification increases, life in these oceans is affected as well. Their productivity, as well as their lifespan, decreases, and it is an enormous problem.

### ***Exercise 15.***

***Read and translate the following sentences into English.***

1. Температурні аномалії витіснили рибу з її природного середовища існування та порушили цілі екосистеми.

2. Пластик розкладається на мікропластик або наночастинки і океан є остаточним поглиначем пластикових відходів на нашій планеті.

3. Океани переповнені загрозами, які варіюються від зміни температури та окислення до забруднення та надмірного вилову.

4. Пластикові предмети на кшталт забутих рибальських сітей убивають дельфінів, морських черепах та інших тварин.

5. Частинки пластику часто застрягають у горлі та травній системі жителів океану.

6. Нафта, що розлилася в океані, може забруднити зябра і пір'я морських тварин, що ускладнить пересування, політ або годування дитинчат.

7. В океан потрапляє велика кількість радіоактивних ізотопів внаслідок випробувань ядерної зброї, скидання контейнерів з відходами атомних електростанцій та ін.

8. Найбільше забруднення Світового океану відбувається в його мілководній прибережній зоні.

9. Відомо, що найбільш забрудненою є північна частина Тихого океану, найчистішими є південна частина Атлантичного океану та Середземне море.

10. Щоб зберегти світовий океан потрібно економно використовувати воду, не засмічувати морські простори, берегти рибні багатства від хижацького винищення, насаджувати водоохоронні ліси.

11. Океан допомагає регулювати глобальний клімат і є основним джерелом води, що підтримує все живе на планеті: від коралових рифів до засніжених вершин, лісів і річок.

12. Крім того, океани знижують рівень парникових газів в атмосфері, приносячи користь всьому людству.

## UNIT 8 NOISE POLLUTION



### ***Exercise 1.***

***Answer the following questions.***

1. How much are you exposed to noise?
2. Do you like listening to music loudly?
3. Do you feel comfortable at the concert, party, in the street with intense traffic?
4. What have you heard of noise pollution?
5. Could it be harmful or even dangerous for people or wildlife?

### ***Exercise 2.***

***Learn the vocabulary.***

altered ['ɔ:lɪəd] – змінений, видозмінений

blast [blɔ:st] – вибух, підривний заряд, вибухова, ударна хвиля

bluebird ['blu:bɜ:d] – дрібний співочий птах з блакитним забарвленням

СПИНКИ

caterpillar ['kætəpɪlə] – гусениця

chaotic / chaotical [keɪ'ɒtɪk] – хаотичний

cracker ['krækə] – хлопавка, петарда, невелика ракета (у феєрверку)

decibel ['desɪbel] – децибел, дБ

dorsal vessels ['dɔ:s(ə)l] – спинні судини

echolocate ['ekəʊlə(u)keɪt] – виявляти за допомогою ехолокації

exposure [ɪk'spəʊʒə] – піддавання зовнішньому впливу

induced [ɪn'dju:st] – викликаний, спричинений

interfere [ɪntə'fɪə] – перешкоджати, заважати, шкодити

loudspeaker [laʊd'spi:kə] – гучномовець, репродуктор

impairment [ɪm'peəmənt] – погіршення, ослаблення

predator ['predətə] – хижак

seismic ['saizmɪk] – сейсмічний

seismic survey ['sɜːveɪ] – геологічна розвідка

tow [təʊ] – буксирувати

tranquil ['træŋkwɪl] – спокійний, врівноважений, мирний, безтурботний

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

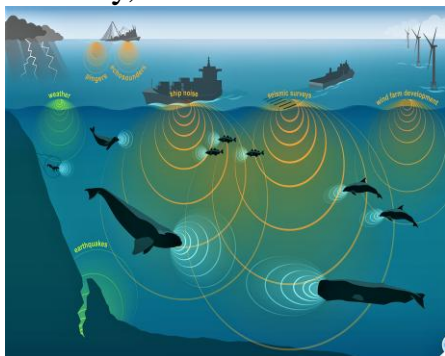
## **Noise Pollution**

Noise pollution is an invisible danger. It cannot be seen, but it is present nonetheless, both on land and under the sea. Noise pollution is considered to be any unwanted or disturbing sound that affects the health and well-being of humans and other organisms.

The intensity of sound is measured in decibels (dB). The faintest sound that the human ear can hear is 1 Db. Sounds that reach 85 decibels or higher can harm a person's ear. Due to increasing noise around the civilizations, noise pollution has become a matter of concern. Some of its major causes are vehicles, aircraft, industrial machines, loudspeakers, crackers, etc. When used at high volume, some other appliances also contribute to noise pollution, like television, transistor, radio, etc.



Noise pollution impacts millions of people on a daily basis. The most common health problem it causes is Noise Induced Hearing Loss (NIHL). Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. These health problems can affect all age groups, especially children. Many children who live near noisy airports or streets have been found to suffer from stress and other problems, such as impairments in memory, attention level and reading skills.



Noise pollution also impacts the health and well-being of wildlife. Studies have shown that loud noises can cause caterpillars' dorsal vessels (the insect equivalent of a heart) to beat faster, and cause bluebirds to have fewer chicks. Animals use sound for a variety of reasons, including to navigate, find food, attract mates and avoid predators. Noise pollution makes it difficult for them to accomplish these tasks, which affects their ability survive.



Increasing noise is not only affecting animals on land, it is also a growing problem for those that live in the ocean. Ships, oil drills, sonar devices, and seismic tests have made the once tranquil marine environment loud and chaotic. Whales and dolphins are particularly impacted by noise pollution. These marine mammals rely on echolocation to communicate, navigate, feed, and find mates, and excess noise interferes with their ability to effectively echolocate.

Seismic surveys also produce loud blasts of sound within the ocean. Ships looking for deep-sea oil or gas deposits tow devices called air guns and shoot pulses of sound down to the ocean floor. The sound blasts can damage the ears of marine animals and cause serious injury. Scientists believe this noise may also be contributing to the altered behavior of whales.

#### ***Exercise 4.***

***Read some facts about noise and discuss the following questions with your partner.***

1. How much noise pollution is there in your neighbourhood?
  2. What are the sources?
- Traffic noise accounts for most polluting noise in cities. For example, a car horn produces 90 dB and a bus produces 100 dB.
  - A single aircraft produces 130 dB.
  - Building and car park construction and road and pavement resurfacing works are very noisy. For example, a pneumatic drill produces 110 dB.
  - Bars, restaurants and terraces that spill outside when the weather is good can produce more than 100 dB. This includes noise from pubs and clubs.
  - The noise made by animals can go unnoticed, but a howling or barking dog, for example, can produce around 60-80 dB.

#### ***Exercise 5.***

***Read the following sentences and make up 12 questions to the italicized words.***

1. We could *stroll* along the beach after dinner.
2. She knew that by failing her finals she could *jeopardize* her whole future.
3. These chemicals have a *detrimental* impact on the environment.
4. This year's budget *dwarfs* all previous ones.
5. A *ripple* of laughter ran through the crowd.
6. Due to frequent hair dying here *follicles* got damaged.
7. She seemed rather *aloof* when in fact she was just shy.
8. She decided to *forego* going for a walk because of the rain.
9. The decision to invest in the energy company was a *no-brainer*.
10. Yesterday I bought a *lawnmower* to cut the grass in the backyard.

11. It takes 2 *hours* to damage your hearing if noise level is 105 decibels.  
 12. Traffic noise accounts for most polluting noise in *big and small* cities.

**Exercise 6.**

**Match the words in column A with their definitions in column B.**

<b>A</b>	<b>B</b>
1. to stroll	a. any of the very small holes in the skin that a hair grows from
2. to jeopardize	b. a machine used for cutting grass
3. detrimental	c. not friendly or willing to take part in things
4. to dwarf	d. something that is very simple to do or to understand
5. a ripple	e. to give up or do without
6. a follicle	f. to walk in a slow relaxed way, especially for pleasure
7. aloof	g. causing harm or damage
8. to forego	h. a sound or feeling that is slight but is noticed
9. no-brainer	i. to make something seem small by comparison
10. a lawnmower	j. to put something in danger of being harmed or damaged

**Exercise 7.**

**Read the following statements and choose the proper answer.**

1. We heard a \_\_\_\_\_ of tires. It was a police-car turning a corner at top speed.

- a) squeal
- b) clatter
- c) roar
- d) splash

2. The plates and glasses fell to the floor with a \_\_\_\_\_.

- a) whistle
- b) rustle
- c) crash
- d) bang

3. *We live near the airport and there's a terrible \_\_\_\_\_ every time a plane goes overhead.*

- a) squeal
- b) clatter
- c) roar
- d) splash

4. *The day was very quiet and we could hear the \_\_\_\_\_ of leaves in the wind.*

- a) whistle
- b) rustle
- c) crash
- d) bang

5. *He fell into the water with a great \_\_\_\_\_.*

- a) squeal
- b) clatter
- c) roar
- d) splash

6. *I heard a \_\_\_\_\_. It sounded like a gun-shot.*

- a) whistle
- b) rustle
- c) crash
- d) bang

7. *It was an enormous, heavy, old, wooden door and it used to \_\_\_\_\_ loudly when anyone opened it.*

- a) rumble
- b) creak
- c) whistle
- d) rustle

8. *It was the best football match I've ever seen. Both teams played hard until the final \_\_\_\_\_.*

- a) rumble
- b) creak
- c) whistle
- d) rustle

9. *The metal tray fell down the stone stairs with a \_\_\_\_\_.*

- a) squeal
- b) clatter
- c) roar
- d) splash

10. I could hear the \_\_\_\_\_ of thunder in the distance.

- a) rumble
- b) creak
- c) whistle
- d) rustle

11. There was no sound except the quiet \_\_\_\_\_ of the airconditioning.

- a) hum
- b) peal
- c) crack
- d) tick

12. At every hour on the radio there are six \_\_\_\_\_ so that people can check the precise time.

- a) squeaks
- b) pops
- c) pips
- d) cracks

13. The champagne cork finally came out with a loud \_\_\_\_\_.

- a) squeak
- b) pop
- c) pips
- d) jingle

14. Be careful. The ice is very thin and I think I heard it \_\_\_\_\_.

- a) hum
- b) peal
- c) crack
- d) tick

15. To celebrate the happy event, all the church bells in the town began to \_\_\_\_\_.

- a) hum
- b) peal
- c) crack
- d) tick

16. I must oil my bike. There's a \_\_\_\_\_ somewhere in the back wheel.

- a) squeak
- b) pop
- c) pip
- d) jingle

17. The engine of a Rolls Royce is so quiet that even when the car is going fast you can hear the clock \_\_\_\_\_.

- a) hum
- b) peal
- c) crack
- d) tick

18. The animals had small bells round their necks, which used to \_\_\_\_\_ when they moved.

- a) squeak
- b) pop
- c) pips
- d) jingle

**Exercise 8.**

**Match the causes of noise pollution in column A with the effects of noise pollution in column B.**

<b>A</b>	<b>B</b>
1. animals	a. excessive noise exposure can raise blood pressure and rates
2. social events	b. howling or barking dog can produce noise around 60-80 dB which can disturb neighborhood
3. construction activities	c. songs on full volume and dance till midnight, which makes the condition of people living nearby pretty worse
4. transportation	d. noise from these activities hinders the hearing abilities of individuals exposed to this sound
5. loud voice	e. a large number of vehicles produce heavy noise, and people find it difficult to get used to it

**Exercise 9.**

**Follow the link <https://www.youtube.com/watch?v=0CPnLGKGrBU> to watch the video about things that are and aren't loud or noisy. Make up a dialogue and introduce it with your partner.**

**Exercise 10.**

**Estimate and discuss the loudness of the following sounds. Rearrange the sounds in order of increasing loudness.**

1. Chain saw
2. Breathing
3. Just audible sound
4. Conversation in a restaurant
5. Racetrack
6. Airport
7. Airstrip with planes taking off
8. Raking leaves
9. Rustling of a newspaper
10. Air drill breaking cement

**Exercise 11.**

**Read the following text and translate it into Ukrainian. Retell the text in English in the 3<sup>rd</sup> person singular.**

**Noise – the Reason of Heart Attacks**

Traffic noise increases people's blood pressure which is related to heart attacks and strokes.

«Noise produces a stimulus to the central nervous system and this stimulus releases some hormones», said Dr David Rojas from the Barcelona Institute for Global Health in Spain. «This increases the risk of hypertension, and hypertension has been related with many other cardiovascular and cerebrovascular diseases like infarction (heart attacks) and strokes».



He was speaking in Brussels, Belgium, on 23 May, 2018 at the annual Green Week conference, part of a Europe-wide event to help people swap best practices on environmental activities and policies. That year's focus was how the European Union was helping cities to become better places to live and work.

Dr Rojas, an environmental health researcher, says that despite the fact that noise pollution is a major public health problem in cities – and, in fact, beats air pollution as a risk factor in Barcelona – there is a tendency to overlook the problem because we can tune it out.

«When we have a background noise, the brain has the capacity to adapt to this noise», he said. «And you don't see it as an annoyance so much and you start to accept and adapt. But even if you are not conscious of the noise, this is still stimulating your organic system».

Dr Rojas' research, which was carried out under the HELIX and PASTA projects, gathered data on the multiplicity of pollutants that we encounter in cities. He hopes the findings can be used to shape policies that could help improve health in urban areas.

For example, improving cycling infrastructure and encouraging parents to walk their children to school could not only cut noise and air pollution but would also improve levels of physical activity.

***Exercise 12.***

***Consult any available sources, read the questions and choose the proper answer.***

*1. What is noise?*

- a) desirable sound
- b) desirable and unwanted sound
- c) undesirable and unwanted sound
- d) undesirable and wanted sound

*2. Which pollution causes hearing loss in organisms?*

- a) air pollution
- b) noise pollution
- c) water pollution
- d) soil pollution

*3. What is the dB of a threshold of pain?*

- a) 100
- b) 110
- c) 120
- d) 146

*4. In anaerobic conditions, mercury is present in metallic form and .....*

- a) humic acid
- b) nitric acid
- c) methane form
- d) sulphide form

*5. Noise pollution effects marine animal's .....*

- a) blood circulation
- b) gene pool
- c) DNA transposition
- d) behavior

*6. Main sources of noise pollution are .....*

- a) transportation equipment

- b) musical instruments
- c) heavy machinery
- d) (a) and (c) both

7. *A safe level of noise depends on .....*

- a) level of noise and exposure to noise
- b) area
- c) pitch
- d) frequency

8. *Sound which has Jarring effect on ears is .....*

- a) noise
- b) music
- c) pleasant sound
- d) soul music

9. *Sounds which are pleasant to our ears are called .....*

- a) noise
- b) musical sounds
- c) frequency
- d) amplitude

10. *The following is used for measuring intensity of sound.*

- a) sound level meter
- b) frequency meter
- c) both (a) and (b)
- d) all of the above

11. *The following scale is used for loudness of sound or noise.*

- a) linear scale
- b) logarithmic scale
- c) exponential scale
- d) none of the above

12. *Wildlife faces more problems than humans due to noise pollution, because animals are dependent on .....*

- a) noise
- b) sound
- c) actions
- d) behavior

13. *Which of the following sounds is pleasant to our ears?*

- a) heavy machinery
- b) transportation equipment



- c) loud noise
- d) music

*14. What is the permissible noise limit of 120 db?*

- a) 30 minutes
- b) 2 minutes
- c) 1 minute
- d) 30 seconds

*15. In which unit is sound measured?*

- a) kilometer
- b) pascal
- c) kilogram
- d) decibel

*16. At what decibel instantaneous rupture of membrane happens?*

- a) 100
- b) 120
- c) 146
- d) 150

*17. What is the dB of a threshold of hearing?*

- a) 0
- b) 10
- c) 50
- d) 100

*18. Noise pollution can cause .....*

- a) hypertension
- b) hearing loss
- c) sleep disturbances
- d) all of the above

*19. Level of noise recommended in most countries is .....*

- a) 30-40 dB
- b) 95-100 dB
- c) 85-90 dB
- d) 75-80 dB

### ***Exercise 13.***

***Read the following sentences and translate them into English.***

1. Шумове забруднення – це сукупність хаотичних поєднань шумів, таких як сирени, рух машин, реклами, розмови людей у натовпі та інші.

2. Люди, що живуть поруч із аеропортами та навантаженими дорогами, частіше за інших відчувають головний біль, вживають більше ліків для покращення сну.

3. Гучна поведінка сусідів – це один із факторів, що заважають людям концентруватися та якісно відпочивати.

4. Поступово слух погіршується внаслідок повторюваних шумів, таких як звуки промислових предметів на роботі, гучної музики у навушниках.

5. Шумове забруднення може спричиняти зміни слухових здібностей та нездатність розпізнавати звуки жертви, хижаків або інших членів популяції.

6. Під час війни вибухи, гул винищувачів, танків та інша зброя негативно впливають на сон, міграцію, розмноження, здатність чути та відстежувати здобич диких тварин.

7. Акустична частота, яку використовують дельфіни та кити, збігається з частотою гідролокаторів, що може спричинити викидання на берег.

8. Підводні вибухи можуть завдати надмірного тиску та осколкової травми безхребетним, риbam, рептиліям, птахам і морським ссавцям.

9. Звукопоглинальні панелі, звукопоглинальні штори та звукоізоляційні килимки чудово зменшують шум.

10. Характеристика шумового забруднення полягає в тому, що, хоча воно і подорожує за вітром, воно розташоване в зменшеному радіусі порівняно з іншими видами забруднення.

11. Людське вухо має здатність чути звук від 1 дБ, що може бути, наприклад, тихим шепотом когось.

12. Негативний вплив на людину від шуму мегаполісу на 36 % більш значущий, ніж від паління тютюну.

## UNIT 9 LIGHT POLLUTION



### *Exercise 1.*

*Answer the following questions.*

1. What kind of pollution is worse, noise or light pollution?
2. How bothered are you by light?
3. What damage does light pollution do?
4. Do you prefer the light or the dark?
5. Why are people afraid of the dark?
6. How dark do you need it to be to sleep?
7. Do you think it is sad we can no longer see the stars?
8. How can artificial light affect our safety?

### *Exercise 2.*

*Learn the vocabulary.*

alter ['ɔ:ltə] – змінювати

anticipated – достроковий

artificial [ɔ:ti'fiʃ(ə)l] – штучний, не природний

breeding – розмноження

brightness ['braɪtnɪs] – яскравість

clutter ['kletə] – сум'яття, метушня, безлад, хаос

collide – зіштовхуватися

croaking – кумкати, квакати, каркати, хрипіти

cue [kju:] – репліка, сигнал

demise – смерть, кончина

devastating – спустошливий, руйнівний

disrupt – розірваний, зруйнований, розривати, руйнувати

excessive – надмірний, зайвий, надлишковий

foraging – розшукувати (продовольство), ритися, порпатися (у пошуках чого-небудь)

glare – сліпучий блиск

hatch – виведення (курчат)

trespass – зловживання

nocturnal [nɒk'tɜːnl] – нічний птах, сновиди

pollination – запилення

prey species – жертва, здобич, пожива

wander off – забрідати

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

## **Light Pollution Effects on Wildlife and Ecosystems**



### *What is Light Pollution?*

The inappropriate or excessive use of artificial light – known as light pollution – can have serious environmental consequences for humans, wildlife and our climate. Components of light pollution include:

Skyglow – brightening of the night sky over inhabited areas.

Glare – excessive brightness that causes visual discomfort.

Light trespass – light falling where it is not intended or needed.

Clutter – bright, confusing and excessive groupings of light sources.

For billions of years, all life has relied on Earth's predictable rhythm of day and night. It's encoded in the DNA (deoxyribonucleic acid) of all plants and animals. Humans have radically disrupted this cycle by lighting up the night.

Plants and animals depend on Earth's daily cycle of light and dark rhythm to govern life-sustaining behaviors such as reproduction, nourishment, sleep and protection from predators.

Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures including amphibians, birds, mammals, insects and plants.

### *Artificial Lights Disrupt the World's Ecosystems*

Nocturnal animals sleep during the day and are active at night. Light pollution radically alters their nighttime environment by turning night into day.

According to research scientist Christopher Kyba, for nocturnal animals, «the introduction of artificial light probably represents the most drastic change human beings have made to their environment».

«Predators use light to hunt, and prey species use darkness as cover», Kyba explains. «Near cities, cloudy skies are now hundreds or even thousands of times brighter than they were 200 years ago. We are only beginning to learn what a drastic effect this has had on nocturnal ecology».



Glare from artificial lights can also impact wetland habitats that are home to amphibians such as frogs and toads, whose nighttime croaking is part of the breeding ritual. Artificial lights disrupt this nocturnal activity, interfering with reproduction and reducing populations.

#### *Artificial Lights Can Lead Baby Sea turtles to their Demise*

Sea turtles live in the ocean but hatch at night on the beach. Hatchlings find the sea by detecting the bright horizon over the ocean. Artificial lights draw them away from the ocean. In Florida alone, millions of hatchlings die this way every year.

#### *Artificial Lights have Devastating Effects on Many Bird Species*



Birds that migrate or hunt at night navigate by moonlight and starlight. Artificial light can cause them to wander off course and toward the dangerous nighttime landscapes of cities. Every year millions of birds die colliding with needlessly illuminated buildings and towers. Migratory birds depend on cues from properly timed seasonal schedules. Artificial lights can cause them to migrate too early or too late and miss ideal climate conditions for nesting, foraging and other behaviors.

Many insects are drawn to light, but artificial lights can create a fatal attraction. Declining insect populations negatively impact all species that rely on insects for food or pollination. Some predators exploit this attraction to their advantage, affecting food webs in unanticipated ways.

#### ***Exercise 4.***

***Follow the link [https://www.youtube.com/watch?v=V\\_A78zDBwYE](https://www.youtube.com/watch?v=V_A78zDBwYE) to watch the video about problems of light pollution. Make up a dialogue and introduce it with your partner.***

**Exercise 5.**

**Read the following article and decide whether the statements below are true (T) or false (F). Correct the false ones.**

**Light Pollution Is Taking away Night's Darkness**

The amount and brightness of light from towns and cities around the world is at such a high level that it is reducing the darkness of night. Once upon a time, when night-time fell, we were plunged into darkness. Things are different, and brighter today.



A study published in the journal *Science Advances* reports that artificial light at night is increasing in most countries worldwide. Scientists say it grew by 2.2 % a year between 2012 and 2016. The intrusion of

artificial light into our night-time is causing us many problems. The International DarkSky Association says, «it is not only impairing our view of the universe, it is adversely affecting our environment, our safety, our energy consumption and our health».

Study co-author Franz Holker said artificial light is a threat to our natural environment. He said: «Artificial light is an environmental pollutant that threatens nocturnal animals and affects plants and microorganisms». He added:



«It has ecological and evolutionary implications for many organisms from bacteria to mammals, including us humans, and may reshape entire social ecological systems». Many environmentalists thought the introduction of LED lights would help the planet.

However, cities are using more LED lights because they are cheaper, which is adding to the light pollution and night-time light decreased in 16 countries, including war-torn nations such as Yemen and Syria.

- a) The article said levels of brightness were at high levels.
- b) The article says the study was published in a newspaper.
- c) Light pollution is impairing our view of the universe.
- d) Light pollution is adversely affecting our safety.
- e) The study said artificial light is a danger to night-time animals.
- f) The study said bacteria are not affected by light pollution.
- g) LED lights have helped reduce light pollution.
- h) Light pollution has increased in every country in the world.

**Exercise 6.**

**Guess the spelling of the underlined word.**

1. The amount and nisersbhgt of light
2. egnlpdu into darkness
3. A study bisudlehp in the journal
4. The nstuionir of artificial light
5. vsyledrea affecting our environment
6. our energy umnnpctosio
7. a ahrte to our natural environment
8. an environmental lpttoaunl
9. ornnlutac animals
10. organisms from bacteria to asalmmm
11. light edrescade in 16 countries
12. including rwa-trno nations such as Yemen

**Exercise 7.**

**Match the words in column A with their synonyms in column B.**

A	B
1. amount	a. danger
2. reducing	b. use
3. artificial	c. intensifying
4. threat	d. imitation
5. consumption	e. conservationists
6. pollutant	f. quantity
7. entire	g. devastated
8. environmentalists	h. contaminant
9. adding to	i. lessening
10. war-torn	j. whole

**Exercise 8.**

**Finish the phrase matching the words from column A and from column**

**B.**

A	B
1. the amount and brightness	a. into our night-time
2. we were plunged	b. torn nations
3. the intrusion of artificial light	c. consumption
4. impairing our view of the	d. natural environment
5. energy	e. bacteria to mammals
6. artificial light is a threat to our	f. into darkness
7. nocturnal	g. systems
8. many organisms from	h. of light
9. reshape entire social ecological	i. animals
10. war	j. universe

**Exercise 9.**

**Read the following statements and choose the proper answers.**

1. *What is light pollution?*

- a) light bulbs that are not properly disposed of
- b) bright lights on motor vehicles
- c) outdoor lights that are left on all day, wasting electricity
- d) excessive artificial light in the night sky

2. *Along with an excess of outdoor lighting fixtures, what causes the majority of light pollution?*

- a) lights that are not contained
- b) lights that are too big
- c) lights that are the wrong color
- d) lights that are too far from the ground

3. *Light pollution is what blocks people from viewing the starlit skies from cities.*

- a) true
- b) false

4. *Many people use security lights to light their property through the night. What can people do to keep their houses safe and also to reduce light pollution?*

- a) use dimmer lights
- b) use fewer lights by using lights with a wider range of light
- c) use lights that are higher off the ground
- d) use lights that turn on with a motion sensor

5. *The excess of nighttime light that comes with light pollution causes a disruption in our circadian rhythms. Which of the following best defines these rhythms?*

- a) the way our circulatory system responds to light
- b) our eyes period of relaxing after absorbing so much light during the day
- c) our body's process of getting energy from sunlight
- d) our body's 24-hour biological cycle

6. *Some studies carried out in the early twenty-first century have shown that there is a correlation between light pollution and which of these diseases?*

- a) tuberculosis
- b) epilepsy
- c) breast cancer
- d) diabetes



7. *Light pollution can cause sleep disorders.*

- a) true
- b) false

8. *Animals also face many problems caused by light pollution. Which of the following is NOT one of them?*

- a) decreased amount of food
- b) disorientation
- c) increased predation
- d) disrupted breeding times

9. *Sea turtles are one type of animal that is largely affected by light pollution. It affects their ability to find which of these essentials?*

- a) clean water
- b) food
- c) nesting spots
- d) mates

10. *How does light pollution affect the behavior of migratory birds?*

- a) they nest in cities instead of in the wild
- b) they are drawn into cities where they fly into buildings
- c) they take longer to reach their destination
- d) they start their migration later

### ***Exercise 10.***

***Read and translate the following text into Ukrainian. Make up 12 different questions in writing. Discuss the ways you reduce light pollution with your partner.***

## **10 Simple Ways to Reduce Light Pollution**

Here are 10 simple ways to reduce your light pollution:

### ***1. Turn off lights when not in use***

Many of us are already pre-conditioned to do this when our parents gave us a light scolding growing up when leaving the room without turning off the lights. But if you have slowly grown out of the habit, now's a great time to restart it. Not only does turning off lights help contribute to lessening overall light pollution, it reduces your energy costs at home.

### ***2. Use fewer lights when inside***

Building on the above, it's just good practice to only use light that you absolutely need. If you appreciate low, ambient lighting, you're already off to a great start. Having dimmers installed in every room also allows for using less light overall.

### *3. Keep the blinds and drapes closed at night*

After the sun sets, try to get in the habit of using window shades to keep room lights from escaping your house or hotel room, as it contributes to the light pollution outdoors. This also allows for your own privacy, especially in close quarters such as in hotel or apartment buildings.



### *4. Avoid driving at night*

For many folks, driving at night is like driving in an entirely different world, and some of us have a lack of depth perception, to boot. So unless it's necessary, avoid driving at night; not only is it safer, using headlights contributes to the degradation of our gorgeous night skies.

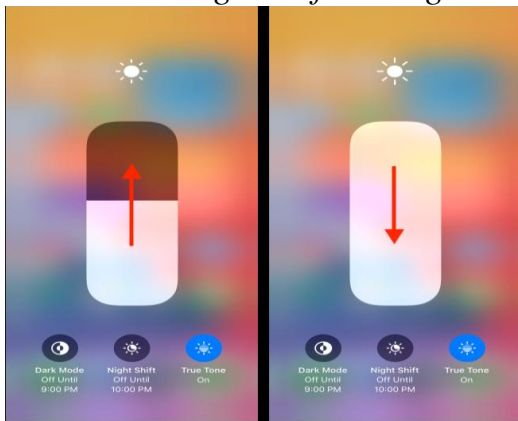
### *5. Turn off all lights when going to sleep*

This goes without saying, but when you're asleep you don't need lights! Small night lights to illuminate your way during that midnight bathroom break are okay, as well as motion sensor lights for safety.

### *6. When going outside, point your lights towards the ground*

When using flashlights or headlights outside to illuminate your way, always try to point them down to the ground. Believe it or not, pointing that tiny ray of light upwards does contribute to light pollution! This is also good practice if you do any night hiking, whether in the city or in rural areas.

### *7. Use night shift settings on all devices*



Nowadays, with all of our devices such as home computers, laptops, iPads, phones, etc. it has the potential to contribute just as much (or more) to light pollution than regular room lights. Especially when everyone in the family is using them. After dark, the bright lights of our screens are not needed, so switch to a dimmer night setting. It's also good for our eyes.

### *8. Let your eyes adjust to less light instead of turning on lights*

Sometimes we are used to absentmindedly turning on the lights full blast after the sun sets. But it's kind of amazing to know that our eyes can adjust rather nicely to no-light or low-light settings if we just give it a few minutes. Don't believe us? Try it!

### *9. Unplug from devices as the sun sets*

Going a step further from point number seven, reducing the use of our devices in the evening is always a great habit to form. We've all heard of the potential dangers of too much screen time. After dinner, make it a rule to unplug completely. After a few days, you'll find that it's pretty easy.

*10. Use only downward facing lights inside when you can*

When light points upward it contributes directly to the artificial sky glow – that glow you see over urban areas from a cumulative array of lights. This sky glow spills over into neighboring areas and can also disrupt wildlife. Install light shields for any outdoor lighting set-ups to help direct the light downward to a specific area.

***Exercise 11.***

***Choose your role A, B, C or D, make up a dialogue with your partner and introduce it to the class.***

*Role A – You Can Sleep*

You think sleeping time is the best thing about the dark. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): quietness, looking at the stars or nightlife.

*Role B – Quietness*

You think quietness is the best thing about the dark. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): sleeping time, looking at the stars or nightlife.

*Role C – The Stars*

You think looking at the stars is the best thing about the dark. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): quietness, sleeping time or nightlife.

*Role D – Nightlife*

You think nightlife is the best thing about the dark. Tell the others three reasons why. Tell them what is wrong with their things. Also, tell the others which is the least interesting of these (and why): quietness, looking at the stars or sleeping time.

***Exercise 12.***

***Read and translate the following text into Ukrainian. Compare the light pollution problems in Ukraine and China. Discuss it with your partner.***

***Lights off: China Finally Takes Action on Light Pollution***

When a record-breaking heatwave hit the majority of China this past summer, Shanghai finally decided to shut off the lights. The usually glowing metropolis hit the off switch on decorative lights, LED billboards, and light

shows along its famous Bund waterfront area on August 22 and 23, to save electricity in the face of hydropower shortages and overloaded grids across the country.

«Currently in Shanghai, the night sky in the city’s central Xuhui district is 25 times brighter than in Nanhuizui Guanhai Park in the suburbs», says Liu Chengze, assistant professor of astronomy at Shanghai Jiaotong University. Back in 2020, Liu and his students found that the brightness of Shanghai’s sky, as measured at the Sheshan branch of the Shanghai Astronomical Observatory (SHAO), had increased 100 times in the past 20 years. This so severely influenced the operations of SHAO’s 1.5-meter optical telescope, once the biggest telescope in East Asia, that it was taken out of operation in 2015, with plans to move it further away from the downtown area in order to better observe the night sky.

But it’s not just an inconvenience to astronomers. Light pollution is tied to major impacts on wildlife, energy waste, and human health risks, in particular circadian rhythms and mela-*tonin* production.



Like water or air pollution, light pollution, another side effect of industrialization, has become one of China’s greatest environmental challenges. Light pollution is universally defined as inappropriate or excessive artificial lighting, which come from sources such as exterior and interior lighting in buildings, advertisements, offices, factories, streetlights, and illuminated sporting venues. In China, there are three common categories of light pollution: white light pollution caused by the reflection on building surfaces in the daytime; skyglow caused by electrical illumination at night; and color light pollution caused by colored light sources.

It’s not just big eastern coastal cities like Shanghai causing problems. Although worldwide, Europe and North America are more proportionately affected, with more than 99 percent of their populations living under light-polluted skies, China has the largest total number of people experiencing light pollution.

Artificial light also disrupts the biological rhythms of wildlife, affecting reproduction, nourishment, sleep, and self-defense, and can have a ripple effect on the entire ecosystem. In 2021, researchers from Duke Kunshan University in Jiangsu province found that artificial light causing a loss of direction was one of the main reasons that birds crashed into buildings, the second biggest contributing factor to bird deaths worldwide.

Yet these measures are just a drop in the ocean. Liu believes that policies and public complaints are not enough to make fundamental improvements as the issue of light pollution is still not being taken seriously, neither in China nor internationally. He calls for more education via the media on the issue. «If you want to look up at the sky and see the stars, you need to prevent light pollution now», he warns. «Otherwise, you won't be able to see the stars anywhere after several decades of development».

### ***Exercise 13.***

***Read the following sentences and translate them into English.***

1. Багато країн світу розробляють стандарти зовнішнього освітлення міста, які будуть захищати людей від його згубного впливу на здоров'я.

2. Світіння неба відбувається внаслідок відбиття світла від освітлених поверхонь і світла, спрямованого в небо.

3. Сильне освітлення призводить до того, що багато мігруючих видів тварин можуть плутати час, змінювати відносини хижак–жертва і викликати агресію.

4. Процес боротьби зі світловим забрудненням має два напрямки: обмеження штучного освітлення і впровадження ефективного розподілу світла в місті.

5. У Норвегії впроваджують динамічне освітлення, коли яскравість дороги знижується, якщо на трасах відсутні автомобілі.

6. Кожна людина може внести вклад в боротьбу зі світловим забрудненням, не використовуючи світло в квартирі без потреби.

7. Довгий час люди використовували ніч для своєї діяльності, штучно освітлюючи і, отже, впливаючи на природне середовище.

8. Погано спрямоване вуличне освітлення, яскраві білборди та нічний рух транспортних засобів генерують надлишок світла.

9. Світлове забруднення передбачає марнотратство електроенергії, що викликає економічні втрати та марні витрати ресурсів.

10. Найбільше світлового забруднення у світі відбувається в найбільш розвинених країнах та у великих містах.

11. Ми можемо побачити зірки завдяки контрасту їхньої яскравості із небом, а світлове забруднення, викликане відблисками міст, робить нічне небо невидимим.

12. Висока щільність населення та процвітаюча економіка роблять Гонконг містом з високим рівнем світлового забруднення.

## UNIT 10 NATURAL DISASTERS



### *Exercise 1.*

*Before reading the text about natural disasters let's discuss the following questions.*

1. Name some devastating disasters in the history of mankind.
2. What natural disasters do you know?
3. Do they pose threats and challenges to the survival and welfare of mankind?
4. What are the causes of natural disasters?
5. Can natural disasters be predicted?

### *Exercise 2.*

*Learn the vocabulary.*

control water flow – контролювати водний потік

dams – дамби

devastation – спустошення

duration – тривалість

earthquake – землетрус

emergency response system – система швидкого реагування

firefighters – пожежники

flood – повінь

flood management – контроль за повінню

intensity – інтенсивність

landslide – зсув ґрунту

natural disaster – стихійне лихо

prevent – запобігати

recovery efforts – зусилля на відновлення  
resistant to seismic activity – стійкі до сейсмічної активності  
search and rescue teams – пошуково-рятувальні команди  
seismic waves – сейсмічні хвилі  
tectonic plates – тектонічні плити  
the Earth's surface – земна поверхня  
the Richter scale – шкала Ріхтера  
warning systems to alert of potential danger – система оповіщення про потенційну небезпеку  
wildfires – лісові пожежі

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

## **The Devastating Earthquakes**

Natural disasters have posed threats and challenges to the survival and welfare of mankind. The ongoing global warming not only increases the probability of climate-induced disasters such as drought, heatwaves and wildfires, but it also increases the probability of flooding-related hazards and earthquakes.

An earthquake is a natural disaster that occurs when two tectonic plates in the Earth's crust suddenly shift, releasing energy in the form of seismic waves. These waves cause the ground to shake and can result in significant damage to buildings, infrastructure,



and other structures on or near the Earth's surface. Earthquakes can vary in intensity and duration depending on a number of factors, including the size of the fault, the depth of the earthquake, and the proximity of the epicenter to populated areas. The magnitude of an earthquake is usually measured on the Richter scale, which is based on the amplitude of the seismic waves.

Turkey is a country that is prone to a range of natural disasters, including earthquakes, floods, landslides, and wildfires. Overcoming the challenges posed by these disasters requires a combination of preparedness, response, and recovery efforts. Earthquakes are a significant natural disaster that Turkey faces.

The country sits on several active fault lines, making it one of the most earthquake-prone countries in the world. In recent years, Turkey has taken steps to improve its earthquake preparedness and response capabilities. For example,

the country has implemented stricter building codes and retrofitting programs for existing buildings to make them more resistant to seismic activity. Turkey has also established a strong emergency response system that includes search and rescue teams, medical assistance, and supplies.

Due to their unpredictable nature, earthquakes can be extremely dangerous and cause widespread devastation. Floods and landslides are also common in Turkey, particularly in the Black Sea region. To mitigate the effects of these disasters, Turkey has implemented flood management and early warning systems to alert residents of potential dangers. The government has also invested in infrastructure projects, such as building dams and reservoirs, to control water flow and prevent flooding. In recent years, Turkey has also faced several devastating wildfires, particularly in the summer months. The government has taken steps to improve its firefighting capabilities by investing in better equipment and training for firefighters. Additionally, Turkey has implemented measures to prevent wildfires, such as clearing brush and implementing fire bans during dry seasons.

Earthquakes are natural disasters that can cause significant damage to infrastructure, loss of life and livelihoods. On February 6, 2023, a powerful earthquake occurred in the southeast of Turkey and on the territory of Syria. The 7.7-magnitude earthquake was reported to be the strongest since 1939. The total number of dead as of February 18 in Turkey and Syria is more than 50 thousand people.

It is important for individuals and communities to take steps to prepare for earthquakes and other natural disasters, such as developing emergency plans and building earthquake-resistant structures.

#### ***Exercise 4.***

***Answer the following questions.***

1. How can one define the term «natural disaster»?
2. What kind of natural disaster is an earthquake?
3. Can it result in significant damage to buildings, infrastructure and other structures on or near the Earth's surface?
4. How can earthquakes vary?
5. What are significantly safer practices for preventing wildfires?
6. Has government invested in infrastructure projects, such as building dams and reservoirs, to control water flow and prevent flooding?
7. What should be done to reduce the devastating impact of wildfires?
8. Are floods and landslides common in Turkey?
9. What has Turkey implemented to mitigate the effects of these disasters?
10. What happened in the southeast of Turkey and on the territory of Syria on February 6, 2023?
11. What damage to infrastructure did the earthquake cause?
12. Name the steps to prepare for earthquakes and other natural disasters.



**Exercise 5.**

**Read the text «The Devastating Earthquakes» in exercise 3 and decide whether the following statements are true (T) or false (F). Correct the false ones.**

1. An earthquake is a natural disaster that occurs when two tectonic plates in the Earth' crust suddenly shift, releasing energy in the form of seismic waves.
2. The magnitude of an earthquake is usually measured on the Richter scale, which is based on the amplitude of the seismic waves.
3. Turkey is a country that is resistant to a range of natural disasters, including earthquakes, floods, landslides, and wildfires.
4. In recent years, Turkey has taken steps to improve its hurricane preparedness and response capabilities.
5. Earthquakes can be extremely dangerous and cause widespread devastation.
6. Floods and landslides are also common in Turkey, particularly in the Red Sea region.
7. Earthquakes are artificial disasters that can cause significant damage to infrastructure, loss of life and livelihoods.
8. On February 6, 2023, a powerful earthquake occurred in the southeast of Turkey and on the territory of Syria.

**Exercise 6.**

**Choose the right answer to the given statements below.**

1. The word «resistant to» in the third paragraph is closest to meaning .....
  - a) devastating
  - b) opposing
  - c) warning
2. What natural disaster is not mentioned in the text?
  - a) a wildfire
  - b) a hurricane
  - c) an earthquake
3. What measures has Turkey implemented to prevent wildfires?
  - a) building earthquake-resistant structures
  - b) establishing a strong emergency response system
  - c) clearing brush and implementing fire bans during dry seasons
4. What does «them» refer to in the third paragraph?
  - a) response capabilities.
  - b) retrofitting programs

c) existing buildings

5. *The purpose of this text is to .....*

- a) inform
- b) declare
- c) diminish

### ***Exercise 7.***

***Before you read the following text look at the title and make predictions about what you expect the text to be about. Read and translate the text into Ukrainian.***

## **Droughts in Ukraine**

Ukraine is a country that is prone to a range of natural disasters, including droughts floods, landslides and wildfires. Ukraine, as the world's main supplier of food, is particularly vulnerable to drought, namely the agricultural sector. Since 2010, Ukraine has experienced five droughts, each of which affected up to 80 % of the grain crops. Droughts caused losses in grain production amounting to about 3 billion euros.



Until the beginning of 2022, Ukraine implemented modern environmental developments and initiatives. In particular, Ukrainians were engaged in reducing greenhouse gas emissions, reforming environmental finance and targeted use of environmental taxes, improving legislation on environmental impact assessment.

The reform of state environmental control and control of industrial pollution, state support for projects on eco-modernization of industry, use of alternative types of fuel, including biomass, were implemented.

The loss of harvest due to drought in Ukraine not only affects the financial condition of agricultural enterprises, but also threatens to increase unemployment and reduce the amount of currency in the country.

In the country, where the cultivation of wheat occupies an important place in the economy, the government should provide support to producers and save insurance companies in times of crop failure so that they do not go bankrupt. Farmers should always receive support in the form of an insurance payment if crop problems threaten the entire economy of the country.

Drought is the most serious danger in Ukraine in terms of economic losses. The country regularly experiences severe droughts occurring in Ukraine every two to four years. The natural disaster poses a significant risk to the agricultural sector and the people who depend on it.

***Exercise 8.***

***Read the following statements and decide whether they are true (T) or false (F). Correct the false ones.***

1. Ukraine is a country that is prone to a range of natural disasters, including droughts, floods, landslides and wildfires.

2. Ukraine, as the world's main supplier of food, is particularly resistant to drought.

3. Until the beginning of 2022, Ukraine implemented modern environmental developments and initiatives.

4. The loss of harvest due to drought in Ukraine threatens to decrease unemployment.

5. Severe droughts occur in Ukraine every year.

6. In Ukraine drought poses a significant risk to the agricultural sector and the people who depend on it.

7. Since 2010, Ukraine has experienced seven droughts, each of which affected up to 80% of the grain crops.

8. The reform of state environmental control and control of industrial pollution, state support for projects on eco-modernization of industry, use of alternative types of fuel, including biomass, were not implemented.

9. The government should provide support to producers and save insurance companies in times of crop failure so that they go bankrupt.

10. Drought is the most serious danger in Ukraine in terms of economic losses, isn't it?

11. Droughts are natural disasters that can cause significant damage to agriculture.

12. The cultivation of wheat occupies an important place in the economy of Ukraine, doesn't it?

***Exercise 9.***

***Read and give Ukrainian equivalents of the following international words:***

Potential, conservation, productivity, intensive, natural, character, modern, effect, extensive, universal, priority, total, reconstruction, scale, integrate, peak, transmission, distance, manufacture, national, concentration, primitive, utility, expressive, personal, exterior, dynamic, application, concept, assembly, radically, safe, interference, composition, coding, detective, sensitive, to register.

**Exercise 10.**

**Match the words from column A with their Ukrainian equivalents from column B.**

<b>A</b>	<b>B</b>
1 landslide	A інтенсивність
2 the Earth's surface	В сейсмічні хвилі
3 natural disaster	С землетрус
4 wildfires.	Д контроль за повінню
5 seismic waves	Е природне лихо
6 intensity	Ф лісові пожежі
7 earthquake	Г тривалість
8 search and rescue teams	Н тектонічні плити
9 tectonic plates	І зсув ґрунту
10 devastation	Ж земна поверхня
11 floods	К пожежники
12 to prevent	Л повінь
13 resistant to seismic activity	М система швидкого реагування
14 flood management	Н шкала Ріхтера
15 emergency response system	О стійкі до сейсмічної активності
16 to control water flow	Р система оповіщення про потенційну небезпеку
17 duration	Q дамби
18 recovery efforts	Р запобігати
19 warning systems to alert of potential danger	S пошуково-рятувальні команди
20 dams	Т зусилля на відновлення
21 the Richter scale	U контролювати водний потік
22 firefighters	V спустошення

**Exercise 11.**

**Follow the link <https://knowledge.aidr.org.au/resources/flood/> to watch the video about natural disaster. Make up a dialogue and introduce it with your partner.**

**Exercise 12.**

**Read and translate the following text into Ukrainian. Make up 12 different questions.**

## What Is Flooding?

Flooding is an overflowing of water onto land that is normally dry. Floods can happen during heavy rains, when ocean waves come on shore, when snow melts quickly, or when dams or levees break. Damaging flooding may happen with only a few inches of water, or it may cover a house to the rooftop. Floods can occur within minutes or over a long period, and may last days, weeks, or longer. Floods are the most common and widespread of all weather-related natural disasters.



Flash floods are the most dangerous kind of floods, because they combine the destructive power of a flood with incredible speed. Flash floods occur when heavy rainfall exceeds the ability of the ground to absorb it. They also occur when water fills normally dry creeks or streams or enough water accumulates for streams to overtop their banks, causing rapid rises of water in a short amount of time. They can happen within minutes of the causative rainfall, limiting the time available to warn and protect the public.

Densely populated areas are at a high risk for flash floods. The construction of buildings, highways, driveways, and parking lots increases runoff by reducing the amount of rain absorbed by the ground. This runoff increases the flash flood potential.



Sometimes, streams through cities and towns are routed underground into storm drains. During heavy rain, the storm drains can become overwhelmed or plugged by debris and flood the roads and buildings nearby. Low spots, such as underpasses, underground parking garages, basements, and low water crossings can become death traps.

Areas near rivers are at risk from floods. Embankments, known as levees, are often built along rivers and are used to prevent high water from flooding bordering land. In 1993, many levees failed along the Mississippi River, resulting in devastating floods. The city of New Orleans experienced massive

devastating flooding days after Hurricane Katrina came onshore in 2005 due to the failure of levees designed to protect the city.

Dam failures can send a sudden destructive surge of water downstream. In 1889 a dam break upstream from Johnstown, Pennsylvania, released a 30-40 foot wall of water that killed 2200 people within minutes.

Mountains and steep hills produce rapid runoff, which causes streams to rise quickly. Rocks and shallow, clayey soils do not allow much water to infiltrate into the ground. Saturated soils can also lead to rapid flash flooding. Very intense rainfall can produce flooding even on dry soil. In the West, most canyons, small streams and dry arroyos are not easily recognizable as a source of danger. The causative rainfall can occur upstream of the canyon, and hikers can be trapped by rapidly rising water. Floodwaters can carry fast-moving debris that pose significant risks to life.

Additional high-risk locations include recent burn areas in mountains, and urban areas from pavement and roofs which enhance runoff.

***Exercise 13.***

***Match the nouns from column A with the proper adjectives from column B.***

<b>A</b>	<b>B</b>
1 solar	A star
2 astral	B sun
3 terrestrial	C earth
4 lunar	D sky
5 celestial	E moon
6 annual	F year
7 nocturnal	G night
8 diurnal	H time
9 temporal	I day

***Exercise 14.***

***Sort out the words given below into two categories:***

<b><i>Areas at a high risk for flash floods</i></b>	<b><i>Dangerous constructions and locations</i></b>

Canyons, small streams, densely populated areas, dry arroyos, mountains, steep hills, embankments, rocks, shallow soils, saturated soils, low spots, underpasses, underground parking, garages, basements, low water crossings, construction of buildings, highways, driveways, parking lots, recent burn areas in mountains, urban areas, pavement, roofs.

***Exercise 15.***

***Arrange the following words in pairs according to:***

*a) Similar meaning (synonyms):*

fierce, advanced, broad, severe, deep, indisputable, tremendous, wide, highly-qualified, developed, unquestionable, profound, well-trained, remarkable.

*b) Opposite meaning (antonyms):*

complete, high, favorable, important, advanced, short, peaceful, incomplete, low, broad, long, unfavorable, unimportant, backward, military, narrow.

***Exercise 16.***

***Read the text «What Is Flooding?» in exercise 12 and decide whether following statements are true (T) or false (F). Correct the false ones.***

1. Floods can happen during heavy rains, when ocean waves come on shore, when snow melts quickly, or when dams or levees break.
2. Floods are the less common and widespread of all weather-related natural disasters.
3. Flash floods are the most dangerous kind of floods, because they combine the destructive power of a flood with incredible speed.
4. Densely populated areas are at a low risk for flash floods.
5. Low spots, such as underpasses, underground parking garages, basements, and low water crossings can become death traps.
6. Dam failures can send a sudden destructive surge of water downstream.
7. Mountains and steep hills produce rapid runoff, which causes streams to rise slowly.
8. Additional high-risk locations include recent burn areas in mountains, and urban areas from pavement and roofs which enhance runoff.
9. In 1993, many levees failed along the Mississippi River, resulting in devastating floods.
10. Rocks and shallow, clay soils allow much water to infiltrate into the ground.
11. Very intense rainfall can produce flooding even on wet soil.
12. Floodwaters can carry fast-moving debris that pose significant risks to life.

***Exercise 17.***

***Read and translate the following sentences into English.***

1. Стихійне лихо – екстремальне явище природи катастрофічного характеру.
2. Характерними рисами стихійного лиха є його непередбаченість.
3. Стихійне лихо супроводжується загибеллю матеріальних цінностей і жертвами серед населення.
4. За місцем локалізації стихійні лиха поділяють на землетруси, зсуви, селі.
5. Найнебезпечнішим стихійним лихом вважаються посуха і перетворення місцевості на пустелю.
6. Землетруси охоплюють великі території і характеризуються руйнуванням будівель і споруд, під уламки яких потрапляють люди.
7. Повінь – це стихійне лихо, що виникає, коли вода виходить за межі звичайних для неї берегів і затоплює значні ділянки суходолу.
8. Зазвичай причиною повені є значне підвищення рівня води.
9. Підвищення рівня води на річках трапляється внаслідок збільшення притоку води, внаслідок танення снігів, дощів тощо.
10. Серед заходів, спрямованих на зменшення шкоди від стихійного лиха, важливу роль відіграють підготовка й навчання населення.
11. Організація роботи рятувальних служб, створення відповідної інфраструктури, евакуація населення із районів стихійного лиха є дуже важливими.
12. Стихійні лиха завдають значної шкоди економікам країн.



## UNIT 11

### NUCLEAR DISASTER



#### *Exercise 1.*

*Before reading the text about nuclear disasters let's discuss the following questions.*

1. Name some nuclear accidents in the history of mankind.
2. What does radiation come from?
3. How can one avoid accidents in the operation of nuclear reactors?
4. What radioactive elements do you know?
5. What radioactive effluents create a serious health hazard?

#### *Exercise 2.*

*Learn the vocabulary.*

cancer-causing agent – речовина, що викликає рак

contaminated – забруднений

emit – випромінювати

genes – гени

genetic defects – генетичні вади

harmful – шкідливий

heat pollution – теплове забруднення

humanity – людство

mineral deposits – корисні копалини

natural radiation – природна радіація

nuclear disaster – ядерна катастрофа

nuclear power plant – атомна електростанція

nuclear reactor – ядерний реактор

nuclear weapons – ядерна зброя

overheated – перегрітий  
radiation sickness – радіаційна хвороба  
radioactive elements – радіоактивні елементи  
radioactive wastes – радіоактивні відходи  
radioactivity – радіоактивність  
release – випускати, викидати  
unpredictable impact – непередбачуваний вплив

***Exercise 3.***

***Read and translate the following text into Ukrainian.***

### **Nuclear Disaster**

Presently, all of us are subject to some degree of exposure to radiation. Natural radiation regularly enters the atmosphere from outer space. Radioactive elements can be found in water and mineral deposits. We are often exposed to radiation from X rays, luminous watch dials, color television sets, microwave ovens, and radar. Some workers are routinely bombarded at their place of employment. Scientists seem to agree that all radiation is harmful, but there is little consensus on the amount we can safely tolerate. Radioactivity was appearing everywhere in water, soil, plants, animals. One component of the nuclear fallout strontium 90 was a possible cancer-causing agent. Other radioactive elements were associated with genetic defects. For the first time, atomic radiation began to be seriously appreciated for what it is a major threat to life. While such atmospheric testing has since been sharply curtailed, radioactivity from the original tests is still around and will be for many years.

There are several dangers inherent in the production of nuclear power. Nuclear power plants require enormous amounts of water and produce far more heat pollution than do conventional power generators. They emit radioactive effluents as well, such as krypton 85 and tritium. Although only small amounts are involved, a progressive buildup of these elements in the atmosphere could create a serious health hazard.

Nuclear power plants also produce extremely dangerous radioactive wastes that must be handled carefully. These wastes must be isolated from humanity for many, many years. Scientists seriously think of measures to avoid accidents in the operation of nuclear reactors and in the production and disposal of nuclear weapons and of nuclear waste. There are no guarantees of the safety of any of the various methods of disposal.

The history of mankind knows about some of nuclear accidents. A more recent incident has reinforced concern over nuclear power plant safety. On April 26, 1986, a nuclear reactor at the Chernobyl Nuclear Power Station in Ukraine accidentally overheated and subsequently released the largest amount of radioactivity into the atmosphere that has ever been recorded.

Chornobyl nuclear break-down harmful effect is obvious. 12 out of 25 regions have been contaminated with harmful substances, which will be lasting up to hundreds of years. Radiation has become one of the most urgent problems because it may cause changes in human genes. Vast areas of agricultural and forest lands of Ukraine have remained unsafe for more than hundreds years to come.



Significant number of deaths from radiation sickness, elevated levels of stillbirth and birth effects and highly elevated rates of childhood leukemia occurred in the affected areas.

The Fukushima nuclear disaster was a nuclear accident at the Fukushima Nuclear Power plant, Japan. The cause of the disaster was the earthquake which occurred on the afternoon of 11 March, 2011, and remains the most powerful earthquake ever recorded in Japan. The earthquake triggered a powerful tsunami, with 13-14-meter-high waves damaging the nuclear power plant's emergency diesel generators, leading to a loss of electric power.

Immediately after the accident radiation levels increased in food, water, and the ocean near the Fukushima Daiichi plant. Because of the threat of radiation exposure, some 150,000 people were forced to evacuate their homes. There were subsequently multiple leaks at the facility. Radiation made unpredictable impact on the life of human beings.

#### ***Exercise 4.***

***Answer the following questions.***

1. How can one define the term “radiation”?
2. Who is subject to some degree of exposure to radiation?
3. Does natural radiation regularly enter the atmosphere from outer space?
4. Where can radioactive elements be found?
5. What kind of radiation are we often exposed to?
6. Name the dangers inherent in the production of nuclear power?
7. What happened at the Chornobyl Nuclear Power Station on April 26, 1986?
8. How must extremely dangerous radioactive wastes be handled?
9. What is harmful effect of Chornobyl nuclear break-down?
10. Why has radiation become one of the most urgent problems?

11. What consequences dangerous to people's health occurred in the contaminated areas?

12. Does radiation make unpredictable impact on the life of human beings?

**Exercise 5.**

***Before you read the following text comment on the statement below. Then read and translate the text into Ukrainian. Think about the title of the article.***

*Power lines, computers, radar, microwave ovens and electric blankets are sources of non-ionizing electromagnetic radiation and threaten the health of the users.*

It is a bit more than 100 years since electricity generation started, about 90 years since the beginning of public radio transmissions and 70 years since radar was first used. Since the 1950s we began to surround ourselves with significant amounts of electromagnetic energy.



When radar was first introduced in World War II, it was such an important factor in the scientific victory that few raised questions of its biological safety: Safety standards were set high enough to allow the military virtually unrestricted use of microwave and high-frequency radiation. American scientific reports from that time, suggesting that microwave radiation might cause leukaemia, cataracts, brain tumours and heart disease, were ignored.

When maximum exposure levels were set in the 1950s, they were mainly based on how much external power could be dissipated on the surface of the human body without causing a significant rise in body temperature. The validity of these and subsequent safety standards across the electromagnetic spectrum is now being challenged, both within the scientific community and, increasingly, in the courts. This has been brought about by the considerable number of research reports linking low-level alternating electric and magnetic fields with a variety of serious health effects. Particularly worrying are the reports about the effects of 50 Hz and 60 Hz power-line fields, low-frequency pulsed radar systems and high-power ELF (extremely low frequency) communication systems.

Here is a selection of some of the report conclusions:

The risk of dying from acute leukaemia is increased by 2.6 if you work in an electrical occupation, especially if you are a telecommunication engineer or radio amateur. Service personnel exposed to non-ionizing radiation when compared with their unexposed colleagues were almost seven times as likely to develop cancer of the blood-forming organs and lymphatic tissue. 10 to 15 per cent of all childhood cancer cases might be attributable to power-frequency

fields, found in their homes. Clinical depression and suicides were closely linked with living near power lines. Nevertheless, some countries still allow to build houses directly under high-voltage distribution cables.

**Exercise 6.**

**Read the following statements and choose the right answer.**

1. The word «few» in the second paragraph is closest to meaning .....
  - a) every
  - b) any
  - c) not many
  
2. Radiation can be defined as .....
  - a) electromagnetic spectrum
  - b) the sending out of energy in rays
  - c) magnetic field
  
3. The risk of dying from acute leukaemia is increased by 2.6 if you work.....
  - a) on a farm
  - b) in an electrical occupation
  - c) in forestry
  
4. What does «found» refer to in the fourth paragraph?
  - a) blood-forming organs
  - b) power-frequency fields
  - c) childhood cancer cases
  
5. The purpose of this text is to .....
  - a) inform
  - b) advertise
  - c) request

**Exercise 7.**

**Arrange the following words in pairs according to:**

a) *Similar meaning (synonyms):*  
exploration, cosmos, modern, change, launch, humanity, conquest, artificial, breakthrough, spaceman, open, send, man-made, cosmonaut, outerspace, up-to-date, mankind, achievement, begin, turn into.

b) *Opposite meaning (antonyms):*  
late, near, advanced, complex, early, old, swift, long, short, slow, few, new, artificial, backward, simple, many, far, natural.

**Exercise 8.**

Follow the link <https://www.cdc.gov/nceh/features/fukushima-radiation/index.html> to watch the video about nuclear disaster. Make up a dialogue and introduce it with your partner.

**Exercise 9.**

Match the words from column A with their Ukrainian equivalents from column B.

A	B
1 nuclear power plant	А ядерна зброя
2 radioactive elements	В атомна електростанція
3 heat pollution	С випускати, викидати
4 cancer-causing agent	Д радіоактивність
5 nuclear weapons	Е генетичні вади
6 contaminated	Ф радіаційна хвороба
7 emit	Г гени
8 radioactive wastes	Н непередбачувальний вплив
9 genetic defects	І радіоактивні відходи
10 nuclear reactor	Ж шкідливий
11 unpredictable impact	К теплове забруднення
12 genes	Л людство
13 nuclear disaster	М корисні копалини
14 radiation sickness	Н радіоактивні елементи
15 harmful	О випромінювати
16 humanity	Р перегрітий
17 release	Q природна радіація
18 radioactivity	Р загрожувати здоров'ю
19 mineral deposits	С ядерний реактор
20 overheated	Т забруднений
21 threaten the health	У речовина, що викликає рак
22 natural radiation	В ядерна катастрофа

**Exercise 10.**

Before you read the following text look at the title and make predictions about what you expect the text to be about. Read and translate the text into Ukrainian.

**Save Energy**

Americans probably lose about half the energy they buy to run their homes because of poor insulation, bad habits, appliances and heating equipment that

don't work well. You may not be able to buy a new furnace, but you can catch escaping energy in other ways.

1. Turn off the lights, radio, and television set when you leave a room for more than half an hour. (More frequent on-off cycling of lights and appliances actually wastes energy.)

2. If you want to read during the day, move to a sunny part of the room instead of turning on light.

3. Close the blinds or pull the shades to help cool a room in summer. Let sunlight in during winter to help keep the house warm.

4. Ask your parents to turn the thermostat down in winter and up in summer to save on heating and air-conditioning.

5. Make sure doors and windows are closed tight when the heater or the air-conditioner is on.

6. Keep the refrigerator door closed while you decide what you want.

7. Ride your bike or walk for short distances instead of asking your parents to drive you.



### ***Exercise 11.***

***Read the sentences below carefully. Then match each sentence with the disaster it describes given below.***

1. Several people were walking along when suddenly tons of earth came crashing down the hillside and blocked the road in front of them.

2. Over 50,000 people in Ethiopia have died of starvation in the past month. Questions are being asked concerning the delay in supplies of rice and grain which were recently sent to them.

3. The winds have already strengthened considerably and the sea is now very rough indeed. As a result, ferries across the harbour have stopped sailing and all large ships have put out to sea.

4. The river overflowed in several places and huge areas of farming land are now several feet under water. Boats are being used to rescue people in nearby villages.

5. Suddenly the ground shook beneath our feet and the tall building opposite the college began to sway. Windows and doors rattled, and several bookcases in the college library came crashing down.

6. Tankers full of water were sent, but it was too late to save many of the animals and crops there. The whole area was like a vast desert.

7. Smoke poured out of the crater but no one expected an eruption. A week later, however, red hot lava began to flow down the side of the mountain.

8. It swept onwards, covering everything in its path. The travellers had to

get off their camels and lie down until it had eventually passed.

9. Flames swept through the block of offices, burning everything inside. Two hours later only the empty shell of the building remained.

10. The first sign of illness was a pain in the chest, followed by a great thirst and a burning fever. Few medical supplies reached the area and consequently almost all the victims died.

11. It must have been at least twenty feet high as it swept towards the shore. In a few seconds it destroyed all the houses in its way, drowning everyone inside.

- A – Fire
- B – Typhoon
- C – Earthquake
- D – Tidal wave
- E – Plague
- F – Volcano
- G – Drought
- H – Sandstorm
- I – Landslide
- J – Flood
- K – Famine

### ***Exercise 12.***

***Before you read the following text look at the title and comment on the statement below. Read and translate the text into Ukrainian.***

*The main criteria for the selection of new types of reactors are security, the economic attractiveness and competitiveness and optimization of the use of natural resources in the long term.*

## **The Benefits of Nuclear Energy**

Nuclear power opens up completely new technical and economic potentialities. The development of nuclear power production in Ukraine will allow the country to expand power industries and economy as a whole.

For the production of electricity from nuclear power Ukraine is among the top eight countries, and on the contribution of electricity produced in the total amount of electricity the country is among the top five nations.

Nuclear power in Ukraine is an important component of the total fuel and energy complex and holds leading positions in the electricity supply of the country. Today almost half of domestic electricity is produced by nuclear power plants.

The benefits of nuclear generation are the following:

- less CO<sub>2</sub> emissions in comparison with other types of fossil fuel generation;



- essential decrease in consumption of organic energy;

- economical attractiveness and competitiveness in comparison with non-nuclear generation, taking into account the costs of emissions;

- small fuel composes.

For safe operation of working reactors to increase economic efficiency of Ukrainian nuclear power plants

and their development certain further researches in the following directions are necessary:

- modernization and upgrading of nuclear units to improve their safety and efficient operation;

- development of new diagnostic systems equipment, development of regulatory documents to extend the term of 10-15 years safe operation of power;

- introduction of new technologies of radiation monitoring systems with high sensitivity acquisition, processing and analysis of information systems for the physical protection of nuclear facilities;

- selection and construction of new nuclear energy-generating units with a high level of security;

- preparation and support of the decommissioning of nuclear facilities;

- creating an optimal infrastructure for reliable and safe functioning and development of nuclear energy in Ukraine;

- improving and expanding training and retraining of highly qualified specialists for the nuclear power industry of Ukraine.



### ***Exercise 13.***

***Form the proper English equivalents of the following Ukrainian words and word-combinations, using the word “energy”.***

Атомна енергія, внутрішня енергія, біологічна енергія, енергія активації, енергія кванта, енергія спокою, звукова енергія, накопичена енергія, кінетична енергія, механічна енергія, потенціальна енергія, хімічна енергія, світлова енергія, питома енергія, теплова енергія, ядерна енергія.

### ***Exercise 14.***

***Read the following text and translate it into Ukrainian. Make up 12 different questions.***

## **Environment – Friendly Alternative Sources of Energy**

Alternative energy means energy that is produced from sources other than our primary energy supply. Alternative energy sources provide only about 7% of the world's energy needs. This means that fossil fuels, along with nuclear energy, are supplying 93% of the world's energy resources.

As the population grows upwards towards ten billion people over the next 50 years, the world's energy demands will increase proportionately. Not only will it be important for renewable energy to keep up with the increasing population growth, but it must outpace not only these demands but begin replacing fossil fuel energy production if we are to meet future energy needs.

If the global consumption of renewable energy sources remains constant, the world's available fossil fuel reserves will be consumed in 104 years or early in the 22nd century. Clearly, renewable energy resources will play an increasingly vital role in the power generation over the next century.

There's more than enough renewable energy sources to supply all of the world's energy needs forever; however, the challenge is to develop the capability to effectively and economically capture, store and use the energy when needed.



In addition to the established energy sources such as gas, coal,

oil and nuclear, there are a number of other sources that is hydro-electric and tidal power. These two sources are similar in that they are both renewable. However, hydro power is more widely used than tidal, in fact, a substantial amount of electricity is already produced in HEP stations world-wide, whereas tidal stations are still in the very early stages of development.

As far as geographical location is concerned, HEP schemes are to be found on lakes and rivers, while tidal schemes are constructed only in estuaries where tidal variation is great.

As regards capital outlay, both require very high investment. A large-scale HEP plant is capable of producing power more cheaply than conventional sources, such as coal, oil and nuclear plants. Tidal power also compares favourably with nuclear and oil generated electricity, in terms of production costs. Like HEP stations, tidal barrages have a long life-expectancy. It is estimated that they can operate for over 100 years. With respect to continuity of supply, tidal stations differ from HEP schemes in that they often can only supply

power intermittently. HEP stations, however, provide a constant supply of electricity.

Turning now to environmental impact, tidal plants do not seem to create to many problems. In contrast, HEP stations often involve the flooding of large amounts of agricultural land, the destruction of ecological habitats, and may even cause a change in the climate of the area. Dams are a major source of hydroelectric energy. While they collect the vast raw energy provided by water currents, they also create environmental hazards such as silt buildup. They are also significant barriers to fish, which must migrate in order for the species to survive.

Both tidal power and HEP have one big disadvantage, in that if the demand of power exists at any distance from the generating plant, transmitting the electricity is expensive.

The relatively small amount of energy received from the sun's rays by each square meter of the earth's surface, even in the sunniest climates, and the relatively low efficiency that could, at best, be achieved in converting the sun's rays into electricity means that large areas of land would have to be covered by solar (photovoltaic) cells in order to generate a significant amount of power.

Modern windmills have become very efficient at transferring the energy of wind to electricity. Wind power is an important part of the overall renewable energy sources for the future. Commercial wind energy is usually collected by wind "farms" essentially consisting of hundreds of wind turbines (windmills) spread over large plots of land.



The chief problem, however, with solar cell installations and with most other renewable sources of energy such as solar heated boilers and wind generators is that the energy supply is intermittent and depends on the weather, the time of the day and the season of the year. Geothermal energy comes from nature's own nuclear reactor: it

arises from the radioactive decay of an isotope of potassium and other elements which are spread about in the earth's crust. The heat released from this decay flows upwards towards the earth's surface and in most areas it is tiny. But in seismic zones geothermal heat is more concentrated near volcanoes, magma flows, geysers and hot springs, and in areas where earthquakes most often occur.

Heat can be extracted from hot dry rocks by ejecting and then recovering waters or just from groundwater. It can be used for bathing, to heat buildings, to warm greenhouses, as pre-heated water for boilers, sometimes- to generate electricity. Pollution is not a very great problem here. But waste water can normally be re-injected into the ground, in some cases after the removal of

commercially valuable potassium salts. But the problem is that generating electricity and large scale use of geothermal energy is capital-consuming and not always possible.

**Exercise 15.**

**Read the text “Environment – Friendly Alternative Sources of Energy” in exercise 14 and decide whether the following statements are true (T) or false (F). Correct the false ones.**

1. Alternative energy means energy that is produced from sources other than our primary energy supply.
2. There's more than enough renewable energy sources to supply all of the world's energy needs forever.
3. Hydro-electric and tidal power. sources are nonrenewable.
4. Modern windmills have become very efficient at transferring the energy of wind to electricity.
5. Wind power is an important part of the overall renewable energy sources for the future.



6. If the demand of power exists at any distance from the generating plant, transmitting the electricity is cheap.

7. Electricity can be extracted from hot dry rocks by ejecting and then recovering waters or just from groundwater.

8. Dams are a major source of solar energy.
9. In seismic zones geothermal heat is more concentrated near volcanoes, magma flows, geysers and hot springs and in areas where earthquakes most often occur.
10. Generating electricity and large scale use of geothermal energy is capital-consuming and not always possible.

**Exercise 16.**

**Translate the following sentences into English.**

1. Виробництво ядерної енергії становить певну небезпеку.
2. Атомні електростанції потребують значної кількості води.
3. Внаслідок вибуху ядерного реактора 12 із 25 регіонів були забруднені шкідливими речовинами.
4. Лінії електропередач, комп'ютери, радари, мікрохвильові печі та електричні ковдри є джерелами електромагнітного випромінювання, яке загрожує здоров'ю користувачів.

5. З 1950-х років ми почали оточувати себе значною кількістю електромагнітної енергії.

6. Стандарти безпеки були встановлені достатньо високими.

7. Радіаційне випромінювання може спричинити лейкемію, катаракту, пухлини мозку та хвороби серця.

8. Дослідження пов'язують низькорівневі змінні електричні та магнітні поля з різноманітними серйозними наслідками для здоров'я.

9. Особливе занепокоєння викликають повідомлення про вплив ліній електропередач частотою 50 Гц і 60 Гц.

10. Ризик смерті від гострого лейкозу збільшується в 2,6 рази, якщо ви працюєте в електричній сфері.

11. Від 10 до 15 відсотків усіх випадків дитячого раку можна віднести до полів потужної частоти, які знаходяться в їхніх будинках.

12. Клінічна депресія та самогубства були тісно пов'язані з життям поблизу ліній електропередач.

## UNIT 12

### PUBLIC HEALTH ISSUES



#### ***Exercise 1.***

***Before reading the text about public health issues let's discuss the following questions.***

1. Name some common health issues.
2. What do you know about public health issues?
3. Do they pose challenges to mankind?
4. What are the main causes of the most common health issues?
5. Can we improve the quality of life and keep free from diseases?
6. What is environmental impact on health?

#### ***Exercise 2.***

***Learn the vocabulary.***

accumulate – накопичувати

artificial substances – штучні речовини

cholera – холера

dysentery – дизентерія

economic losses – економічні втрати

environmental quality – якість навколишнього середовища

estimate – оцінювати

healthcare access – доступ до медичних послуг

human resources – людські ресурси

humanitarian crisis – гуманітарна криза

immunization – імунізація

infectious diseases – інфекційні хвороби

meningitis – менінгіт

mental health – розумове здоров'я

obesity – ожиріння

pandemic – пандемія  
physical inactivity – фізична пасивність  
poor health systems financing – погане фінансування закладів охорони здоров'я  
poverty – бідність  
public health issues – питання громадського здоров'я  
reproductive health issues – питання репродуктивності  
substance abuse – наркозалежність  
vulnerable – вразливий

### ***Exercise 3.***

***Read and translate the following text into Ukrainian.***

#### **Public Health Issues**

The most common health issues are physical inactivity and food, obesity, tobacco, substance abuse, AIDS, mental health, falling and injury, environmental quality, immunization and healthcare access. These all-personal health issues require attention to improve the quality of life and keep you free from diseases.

The World Health Organization (WHO) has stated that climate change is the biggest health threat facing humanity. Climate change results in deaths and illnesses due to extreme weather events, which also causes food system disruptions, the transmission of food, water, and vector-borne diseases and population displacement. The cost due to the direct causes of health-



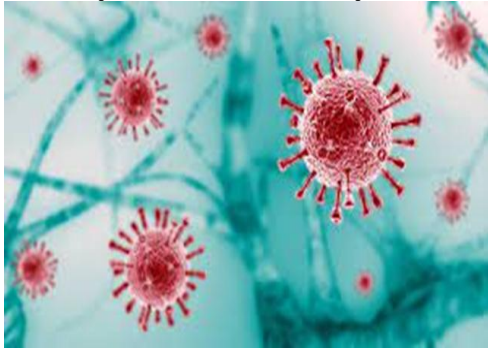
related impact from climate change is expected to rise, and in 2021 it was estimated to have already caused economic losses of more than US\$170 billion. This will increase the proportion of people living in poverty and pose a great challenge to the health systems that have already been severely affected by the pandemic.

Given the toll taken by climate change, aging water and sewer infrastructure, and exposure to per- and polyfluoroalkyl substances (PFAS), the environmental impact on public health can't be underestimated. For example, PFAS are artificial substances that accumulate over time in the environment. Exposure to these “forever chemicals” has been linked to cancer.

Untreated sewage can cause infectious diseases, including meningitis, cholera and dysentery, extreme heat events can lead to death among the most vulnerable groups.

In many cities water and wastewater infrastructure dates back more than a century and requires upgrades to continue serving communities effectively. Poor water quality can result in infectious diseases, as well as exposure to harmful elements such as lead or PFAS.

2021 WHO Health and Climate Change Global Survey Report mentioned that 78 countries have a national health and climate change plan and strategy. These developments will improve the conditions of climate change management in the year 2022 and beyond.



There are other major public health challenges. These challenges are COVID-19, inadequate human resources for health, poor health systems financing, conflict and humanitarian crises, poverty, climate change, the health of children, reproductive health issues and the infodemic.

The COVID-19 pandemic has had a tremendous impact on global health. The emergence of the COVID-19 pandemic has brought the need to invest in health systems around the world. As the world is gradually learning to live with COVID-19, much attention is now being placed on strengthening healthcare systems.

People should advocate for stronger international cooperation, solidarity, and sustainable funding to address these challenges, and improve health across and within populations globally.

#### ***Exercise 4.***

***Answer the following questions.***

1. How can one define the term «public health issue»?
2. What are 6 health issues?
3. What public health challenges were closely tracked in 2022?
4. Did the year 2022 present considerable public health challenges worldwide?
5. The environmental impact on public health can't be underestimated, can it?
6. What can poor water quality result in?
7. The COVID-19 pandemic has had a tremendous impact on global health, hasn't it?
8. Does the global population continue to respond and recover from the ongoing COVID-19 pandemic?
9. Is the world gradually learning to live with COVID-19?
10. Much attention is now being placed on strengthening healthcare systems, isn't?



11. Should health systems financing be sustainable or poor to address the challenges?

12. Will the adverse effects of climate change affect the entire world?

**Exercise 5.**

**Read the text «Public Health Issues» in exercise 3 and decide whether the following statements are true (T) or false (F). Correct the false ones.**

1. The most common health issues are physical inactivity and food, obesity, tobacco, substance abuse, AIDS, mental health, falling and injury, environmental quality, immunization and healthcare access.

2. Climate change results in health improvement due to extreme weather events, which also causes food system disruptions, the transmission of food, water, and vector-borne diseases and population displacement.

3. The cost due to the direct causes of health-related impact from climate change is expected to fall.

4. The health systems have already been severely affected by the pandemic COVID-19.

5. The environmental impact on public health can be underestimated.

6. Much attention is now being placed on strengthening healthcare systems.

**Exercise 6.**

**Choose the right answer to the given statements below.**

1. The expression «keep from» in the first paragraph is closest to meaning

.....

- a) to control
- b) to prevent
- c) to offer

2. How many countries have a national health and climate change plan and strategy according 2021 WHO Health and Climate Change Global Survey Report?

- a) 57
- b) 78
- c) 62

3. What measures should be taken for strengthening healthcare systems?

- a) improving health across and within populations globally
- b) stop serving communities effectively
- c) poor health systems financing

4. What does the abbreviation «PFAS» mean in the third paragraph?

- a) chlorfluorocarbons
- b) sodium hypochlorite.
- c) per and polyfluoroalkyl substances

5. The purpose of this text is to .....

- a) inform
- b) apologize
- c) diminish

**Exercise 7.**

**Match the words from column A with their Ukrainian equivalents from column B.**

A	B
1 environmental quality	A економічні втрати
2 mental health	B доступ до медичних послуг
3 pandemic	C питання репродуктивності
4 immunization	D гуманітарна криза
5 obesity	E людські ресурси
6 estimate	F бідність
7 substance abuse	G якість навколишнього середовища
8 physical inactivity	H штучні речовини
9 poverty	I розумове здоров'я
10 health issues	J наркозалежність
11 cholera	K оцінювати
12 reproductive health issues	L питання громадського здоров'я
13 infectious diseases	M фізична пасивність
14 human resources	N пандемія
15 accumulate	O ожиріння
16 humanitarian crises	P менінгіт
17 meningitis	Q накопичувати
18 healthcare access	R погане фінансування закладів охорони здоров'я
19 dysentery	S імунізація
20 artificial substances	T інфекційні хвороби
21 economic losses	U холера
22 poor health systems financing	V дизентерія

**Exercise 8.**

Follow the link <https://environmental-conscience.com/causes-effects-solutions-for-public-health-issues/> to watch the video about public health issues. Make up a dialogue and introduce it with your partner.

**Exercise 9.**

Before you read the following text comment on the statement below. Read and translate the following text into Ukrainian. Make up 12 different questions.

*Mental health issues increasingly affect the global population.*

### **Mental Health Therapy**

There is no doubt that the pandemic has impacted, and will continue to impact the mental health of millions of people worldwide. Global health authorities are observing an increase in the epidemic of fear, anxiety, and depression. There is a need to strengthen mental health services in a number of countries.



A range of therapy techniques are used in stress counseling. Here are some of the most common. *Cognitive-behavioral therapy* is oriented toward

thinking and correcting what is referred to as diso thinking. Instead of dwelling on negative thoughts, this form of therapy is based on the premise that how you think can affect how you feel. For example, if a friend cancels a lunch date with you or somebody doesn't return your phone call or E-mail, you may take it personally and assume that the person dislikes you. That thought leads you to feel bad about yourself, reinforcing feelings of low self-esteem or even self-loathing. A cognitive-behavioral therapist will ask you to consider other reasons for the cancellation or unreturned call. Perhaps the person was overwhelmed by problems that have absolutely nothing to do with you. Perhaps a last-minute deadline came up. In other words, not everything you perceive to be negative is really negative, and not everything you take personally is personal.

Ultimately, the premise of cognitive-behavioral therapy is this: If you think negative thoughts about yourself and believe you're a failure or that your life is doomed, you are more apt to be sad. On the other hand, if you think positive thoughts and believe in yourself, you are more apt to be happy. Essentially, what has past is past, and you can decide today to be a more positive person, which in turn can attract more positive experiences into your life. Although this approach

might sound easy and a quick fix, changing your perspective on life can be powerful. However, in the midst of a depression, this may have limited success.

*Interpersonal therapy* is a very specific approach to therapy, based on the idea that malfunctioning relationships contribute to the emotional symptoms of stress. You and your therapist will explore current relationships and recent events that may have affected those relationships, such as loss, conflict, or change. You may also explore the roles various people are playing in your life, your expectations of those people, and their expectations of you. Your therapist works in a supporting role to help you develop better strategies to cope or negotiate with key people in your life, which in turn can help to resolve conflicts. Much of this has to do with setting reasonable expectations for relationships and looking at how you might have misinterpreted the actions of others.

*PsychoDynamic therapy* deals with the ghosts of relationships and events from your past, the dynamics of your upbringing, and present events and relationships. Here, you will examine your thoughts, emotions, and behavior over a lifetime. Moreover, you will discuss patterns of behavior and aspects of your personality as possible sources of both internal and external conflict. Couples or groups are often involved in psychodynamic therapy. The motto “the past is history, the future a mystery, and the present a gift” works well in this context.

#### ***Exercise 10.***

***Read the following statements and decide whether they are true (T) or false (F). Correct the false ones.***

1. *Cognitive-behavioral* therapy is oriented toward upbeat thinking and correcting what is referred to as *diso thinking*.
2. Instead of dwelling on positive thoughts, this form of therapy is based on the premise that how you think can affect how you feel.
3. If you think positive thoughts and believe in yourself, you are more apt to be happy.
4. *Interpersonal therapy* is a very specific approach to therapy, based on the idea that strong relationships contribute to the emotional symptoms of stress.
5. *PhychoDynamic therapy* deals with the ghosts of relationships and events from your past, the dynamics of your upbringing, and present events and relationships.
6. The motto “the past is history, the future a mystery, and the present a gift” works well.

#### ***Exercise 11.***

***Before you read the following text look at the title and make predictions about what you expect the text to be about. Read and translate the text into Ukrainian.***

## Healthy Lifestyle

The definition of health changed over time. Different cultures had different ideas of a healthy lifestyle. Culture is the rules a society lives by and it is deeply affected by the history of the land and also by the geography. Since no country has the same history or geography, no country has exactly the same culture or another. Some traditions, even language might be shared, but each country's culture is unique to that country.



Nowadays people are not as healthy as they used to be. The main part of population of the world often smoke, drink alcohol and take drugs, which leads to serious diseases. What is more, lots of them are addicted to computers or watch TV all day long instead of walking and doing sports. As the result, many people are overweight and suffer from heart diseases, eat lots of genetically

modified food, which is definitely harmful. Some believe that eating exclusively dishes of your national cuisine is the only way to live a healthy life. They explain it by genetic factors, stating that people whose ancestors had been living in the geographic area for centuries have a genetic dependence on the local products and dishes made of them. Switching over to international cuisine, from their point of view might have some negative consequences. Their opponents argue that it is silly to exclude international cuisine from our menu in the globalization era, but it is not a problem at all. What we eat has to be balanced against practical considerations – price, availability, personal taste, lifestyle. It's important for successful aging to eat foods rich in nutrients and avoid the empty calories in candy and sweets.

A healthy lifestyle is a sensible, well-balanced diet that gives your body exactly what it needs. The best way of keeping fit is doing sports. If you do regular exercise, you can eat and drink almost everything you want but only that food which do not harm your health. What is more, it is also absence of all bad habits. We must remember that moderation in eating and drinking, reasonable hours of labor and study, regularity in exercise, recreation and



rest, cleanliness, positive outlook and many other essential lay the foundations for food health and long life. People who are surrounded by friends, relatives, children greet each day with hope and optimism. Being opened-minded, self-motivated, enthusiastic, generous will help people to overcome a number of pressing social and economic problems.

**Exercise 12.**

**Arrange the following words in pairs according to similar and opposite meaning.**

Obtain, aid, different, cold, long, joined, take, hot, give, take apart, clean, assembling, absent, the same, short, dirty, help, on the one hand, impossible, disassembling, present, on the other hand, possible, get, various.

**Exercise 13.**

**Substitute the following word combinations for one word of identical meaning using the given model.**

**Model:** to make smaller – to reduce

To make larger, to make possible, to use instead of, to make steps forward, to work out, to carry out, to make contribution, to make progress, to gain victory, to draw dividing lines, to make sure.

**Exercise 14.**

**Read and translate the following text into Ukrainian. Write an essay about your personal experience in regular exercising.**

### **Practice Yoga**

Physical inactivity is the biggest public health problem of the century. Research indicates that staying physically active can help prevent or delay certain diseases, including some cancers, heart disease and diabetes, and also relieve depression and improve mood.

For many, yoga is not just about various stretches or postures – it is actually a way of life. It is part of a whole science of living known as the Ayurveda, The Ayurveda is an ancient (roughly 3,000 years old) Indian approach to health. Essentially, it divides the universe into three basic



constitutions or energies known as doshas. The three doshas are based on wind (yata), fire (pitta), and earth (kapha). These doshas also govern our bodies, personalities, and activities. When your doshas are balanced, all functions well, but when they are not balanced, a state of disease (disease, as in not at zade) can set in. Finding the balance involves changing your diet to suit your predominant dosha, Foods are classified as kapha, vata or pitta, and we eat more or less of whatever we need for balance.

Practicing yoga is a preventive health science that involves certain physical postures, exercises, and meditation. Essentially, yoga is the exercise component of the Ayurveda. It involves relaxing meditation, breathing, and physical postures designed to tone and soothe your mental state and physical state. Most people benefit from introductory yoga classes or videos.

***Exercise 15.***

***Form the proper English equivalent of the following Ukrainian words and word-combinations, using the word “living”.***

Рівень життя, умови життя, життєвий простір, багате життя, жива матерія, жива істота, прожитковий мінімум, квартира на одну сім'ю, просте (скромне) життя.

***Exercise 16.***

***Translate the following sentences into Ukrainian.***

1. Громадське здоров'я – це наука та практика попередження захворювань, збільшення тривалості життя і зміцнення здоров'я шляхом організованих зусиль суспільства.

2. Розумове здоров'я – це наша здатність отримувати інформацію, наша обізнаність, звідки отримувати необхідну інформацію, як її використовувати.

3. Емоційне здоров'я – це здатність розуміти наші почуття і виражати їх.

4. Багато захворювань можуть бути попереджені за допомогою простих і немедичних методів.

5. Заходи громадського здоров'я та програми вакцинації вносять значний вклад в здоров'я населення і збільшення тривалості життя.

6. Система громадського здоров'я – комплекс інструментів, процедур та заходів, що реалізуються державними та недержавними інституціями для зміцнення здоров'я населення, попередження захворювань, збільшення тривалості активного та працездатного віку й заохочення до здорового способу життя.

7. У центрі уваги громадського здоров'я є поліпшення здоров'я та якості життя шляхом профілактики і лікування захворювань.

8. Фізична пасивність є найбільшою проблемою здоров'я сучасної людини.

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*Навчальне електронне видання  
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Можна використовувати в локальному та мережному режимах*

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# **АНГЛІЙСЬКА МОВА ДЛЯ СТУДЕНТІВ-ЕКОЛОГІВ**

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