

О. Н. Корнева, Е. Б. Михайлова, Е. С. Корнилова

SUSTAINABILITY: CHALLENGES AND OPPORTUNITIES

Учебное пособие



Нижний Новгород
2019

Министерства науки и высшего образования Российской Федерации
Федеральное государственное бюджетное образовательное учреждение высшего образования
«Нижегородский государственный архитектурно-строительный университет»

О. Н. Корнева, Е. Б. Михайлова, Е. С. Корнилова

SUSTAINABILITY: CHALLENGES AND OPPORTUNITIES

Утверждено редакционно-издательским советом университета
в качестве учебного пособия

Нижний Новгород
ННГАСУ
2019

Рецензенты:

- Л. Г. Орлова* – доцент, канд. филол. наук, доцент кафедры иностранных языков и конвенционной подготовки ФГБОУ ВО «Волжский государственный университет водного транспорта»
- Т. Н. Плесканюк* – канд. филол. наук, доцент кафедры иноязычной профессиональной коммуникации ФГБОУ ВО «Нижегородский государственный педагогический университет имени Козьмы Минина»

Корнева О. Н. Sustainability: Challenges and Opportunities [Текст]: учеб. пособие / О. Н. Корнева, Е. Б. Михайлова, Е. С. Корнилова; Нижегород. гос. архитектур.- строит. ун-т. – Н. Новгород: ННГАСУ, 2019. – 91 с. ISBN 978-5-528-00342-9

Учебное пособие способствует формированию общекультурных компетенций и реализует требования программы, предъявляемые к дисциплине «Иностранный язык» для студентов-бакалавров, обучающихся по направлению подготовки 05.03.06 «Экология и природопользование». Основной целью пособия является развитие профессионально-иноязычной компетенции студентов в сфере их будущей профессиональной деятельности, а также формирование профессионально-важных качеств современного инженера-эколога.

Пособие основано на материале аутентичных текстов интернет-сайтов и журналов (США, Великобритания) и состоит из разнообразных по форме и содержанию заданий как для аудиторной, так и для самостоятельной работы. Упражнения разработаны с учетом современных методических принципов и направлены на активизацию изученного материала.

ББК 81.2 Англ

CONTENTS

UNIT1 Environmental Issues.....	4
UNIT 2 Traffic and Air Pollution.....	13
UNIT 3 Water Pollution.....	20
UNIT4 Population and the Environment.....	32
UNIT 5 Recycling.....	41
UNIT 6 Greenhouse Effect.....	50
UNIT 7 Global Warming.....	60
UNIT 8 "A Double-edged Sword" of Chemistry and Environmental Problems.....	69
<i>SPEAKING FILE</i>	79
<i>GRAMMAR FILE</i>	81
<i>WRITING FILE</i>	86

UNIT 1

Environmental Issues

GETTING STARTED

Do the quiz and decide *How Green You Are*.

Read the questions and choose the answer you agree most with.

1. If you had a lot of old newspapers and empty bottles, would you...
 - a) leave them on the pavement?
 - b) put them in a rubbish bin?
 - c) recycle them?

2. If somebody offered to give you one of the following as a gift, which would you choose?
 - a) a big, fast car
 - b) a motorbike
 - c) a bicycle

3. If you were in the middle of a city and wanted to go somewhere one or two kilometers away, would you...
 - a) take a taxi?
 - b) take a bus?
 - c) walk/cycle?

4. If you had a picnic on the beach, what would you do with your rubbish? Would you...
 - a) leave your rubbish on the beach?
 - b) put your rubbish in the first bin you found?
 - c) take your rubbish home?

5. If you had £1,000 to spend, would you ...

- a) buy a fur coat?
- b) go on a safari?
- c) adopt a dolphin?

Are your answers mostly *a*, *b* or *c*? See the key to find out how green you are.

Mostly **a's**: You're not very green, are you? Please look after our world before it's too late!

Mostly **b's**: You're trying to be more green, but you don't always get it right. Learn more about the environment and think before you act.

Mostly **c's**: Well done! You're really green! We need more people like you to help us save our environment!

Discuss in pairs the following questions.

- What do you know about the environmental problems? Which of them worry you most? Why?
- Why do young people show much interest in the environmental matters?

Key Vocabulary

Learn and revise the words

Threat (*n*, *v*), release (*n*, *v*), biodiversity (*n*), poisonous chemicals, pollution (*n*), global warming, extinction(*n*), waste(*n*, *v*), rubbish bin, damage (*n*, *v*), recycle (*v*), acid rain, harmful effect, human health, water shortage, environmentally friendly, agriculture(*n*), urban area, climate change, lead to (*v*), supply (*n*, *v*)

Ex.1 Match English expressions with their Russian equivalents.

- | | |
|------------------------|--------------------------|
| 1. biodiversity | a) кислотный дождь |
| 2. waste | b) угроза |
| 3. acid rain | с) ядовитые химикаты |
| 4. human health | d) биоразнообразие |
| 5. global warming | e) отходы |
| 6. threat | f) здоровье человека |
| 7. poisonous chemicals | g) глобальное потепление |
| 8. damage | h) разрушать |

Ex.2 Read the following texts, match the pictures and descriptions with the global environmental problems.

Threat to Biodiversity

Water Shortage

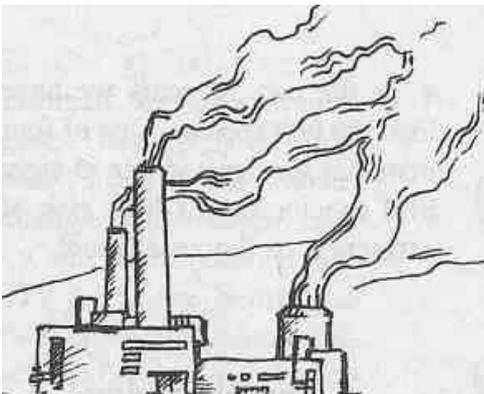
Pollution of sea, rivers

Global Warming

Acid Rain

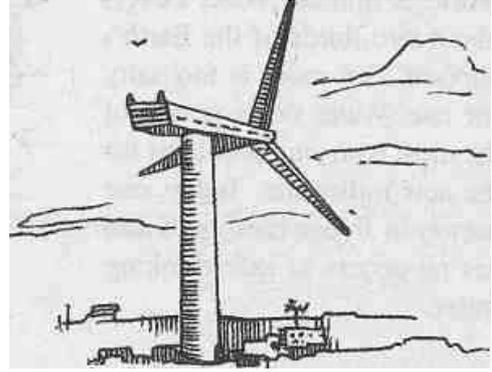
Environmentally Unfriendly Energy Sources

An Increasing Human Population



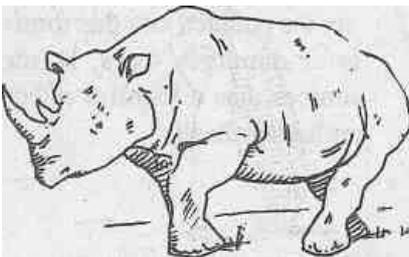
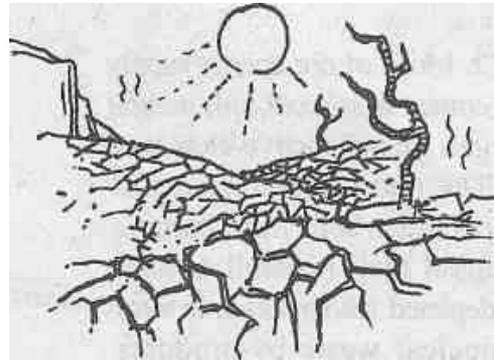
1. Factories and cars release poisonous chemicals into the air, the polluted rain that forms later damages trees, water sources, has a harmful effect on human health.

2. Much of our energy supply comes from coal, oil, natural gas, or radioactive elements. The undesirable effects of pollution both from burning fossil fuels (as well as their depleted resources) and from nuclear waste by-products encourage using (solar, wind, geothermal power and others).



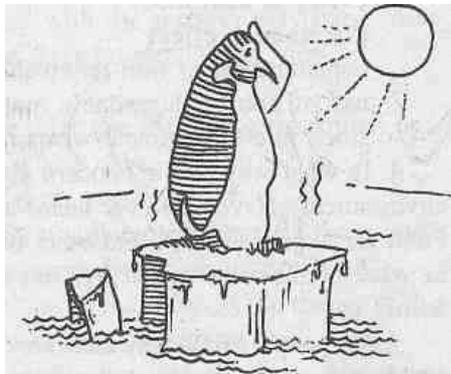
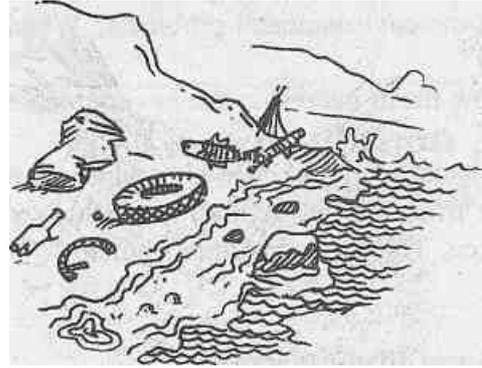
3. There is less and less wilderness in the world. An increasing human population is taking up ever more land for agriculture and urban area.

4. The amount of water in the world is limited. Water covers about two-thirds of the Earth's surface. But most is too salty for use. Water crisis is one of the most worrying problems for the new millenium. Today, one person in five across the world has no access to safe drinking water.



5. In the last 50 years we have lost 300,000 species. Unique animals and plants are getting less. One of four mammal species and one in eight bird species face a high risk of extinction in the near future.

6. Water in sea, rivers and lakes is polluted by wastes and *toxic* chemicals. Sea animals, fish and birds are killed by oil spills.



7. The global warming induced by greenhouse gases (largely by burning fuels) leads to the climate change. The weather is getting warmer. The area covered by sea ice is decreasing. The ice at the North and South Pole can melt causing serious floods in many parts of the world and turning into deserts others. Some scientists think that there is a definite link

between the global warming and the hurricanes, the number of which has considerably increased recently.

Ex.3 Find English equivalents to the following Russian words in the text and use them in your own sentences:

водные ресурсы, ядовитые химические вещества, вредное воздействие, ископаемое топливо, истощенные ресурсы, возобновляемые источники энергии, дикая местность, сельское хозяйство, количество воды, вымирание, отходы, наводнение, пустыня, ураган.

Ex.4 Match the words to make phrases, find them in the text and translate.

1. drinking	a. health
2. energy	b. chemicals
3. poisonous	c. crisis
4. human	d. species
5. water	e. spills
6. mammal	f. sources
7. oil	g. water
8. fossil	h. warming
9. climate	i. fuel
10. global	j. change

Ex.5 Put the words from the box in the correct columns according to the pronunciation of the letters in bold.

harmful, human, much, supply, natural, pollution, fuel, nuclear, agriculture, use, future, introduce, hurricane, number, justify, industrial, destruction, consumption
--

as in club	as in use	as in success

Ex.6 There are a lot of similar words, which carry different meanings. Learn their correct pronunciation. Mind the stress. Give Russian equivalents to the words:

“ec`ology”

“ecol`ogical”

“ec`ologist”

Write down some sentences using these words and read them to your partner.

Focus on Grammar

Present Simple (Настоящее простое время)

We use the Present Simple for things that are true in general or for things that happen sometimes or all the time. (see page 81)

V / V (e)s

- *We know about the environmental problems*
- *The Earth goes round the Sun.*

Ex.7 Find the examples of Present Simple and Present Continuous in the text.

Ex.8 Put the verbs in brackets into the Present Continuous.

Model: *She is drinking water now.*

1. Family life (change) rapidly.
2. I can't understand what he (talk) about.
3. She (feel) guilty. Forgive her.
4. He (come) up with new ideas.
5. We (not get) younger.
6. Today in this country we (face) a lot of problems.
7. These days many people (complain) that life is too tough.
8. You (look) strange, Teddy. What's the matter?

Ex.9 Translate into English.

1. Где Майкл? – Он играет в теннис.
2. Он хорошо играет в футбол? – Нет, он играет плохо.
3. Я не знаю человека, который не любит природу.
4. Я часто разговариваю с моим другом о школе.

5. Александр поет очень хорошо.
6. Смотрите, в небе летает воздушный змей.
7. Он не видит, что я на него смотрю, т.к. он читает что-то с большим интересом.
8. Посмотрите на человека, который сидит у окна. Это наш учитель химии.

Speaking

Ex.10 Discuss major industrially created dangers effecting the environment. Choose them from the list below. Rank them in accordance with their importance. Try to justify your choice.

- nuclear reactors
- industrial emissions
- destruction of the rain forest (deforestation)
- industrial wastes
- nuclear wastes
- carbon monoxide fumes from vehicles
- marine oil spills
- chemical effluence
- greenhouse effect
- consumption of non-renewable energy
- use of non-biodegradable materials
- stock pile of chemical weapons

Ex.11 Discuss in pairs the following questions.

- What can you say about the environmental problems in your city (country)?
- What problems can be considered as the most urgent?

Using the Net

Ex.12 Find in the Internet the answers to the following questions.

In what way does public concern about green issues help to save environment? Have you ever heard about Greenpeace, World Wide Fund for Nature (WWF) and other organizations of the kind? (If so, in what connection was it?) What are eco-warriors?

Ex.13 Presentation.

A large number of environmental disasters occur in the world every day.

Prepare and make a presentation about one of them. Use a supplementary material in SPEAKING FILE p.79.

See Language Box to help you to agree and disagree in SPEAKING FILE p.80.

UNIT 2

Traffic and Air Pollution

GETTING STARTED



- What are the main sources of air pollution?
- What substances are major air pollutants?
- Which of them are the most dangerous? In what connection would you put bad health problems and poor air quality?



Key Vocabulary

Learn and revise the words

exhaust fumes, escalate (*v*), increase (*v*), combustion (*n*), efficiently (*adv*), hydrocarbons (*n*), especially (*adv*), sulphur (*n*), carbon monoxide (*n*), nitrogen (*n*), vehicle (*n*), allergy (*n*), performance (*n*), ozone (*n*), accumulate (*v*), emit (*v*), dangerous substances, bad air quality, nitrogen oxides, lead (*n*).

Word Study

Ex.1 Match words from column A to B. Translate all word combinations into Russian.

A	B
1. exhaust	a. oxides
2. main	b. cities
3. nitrogen	c. smog
4. overcrowded	d. countries
5. photochemical	e. particles
6. developing	f. fumes
7. tiny	g. petrol
8. toxic	h. cause
9. unleaded	i. compounds

Ex. 2 Read the text and find in the text the words from Ex.1 and translate the sentences with them.

Traffic and Air Pollution

1. Cars free us from here and now; they turn the difficulties of a journey into the pleasures of a trip. Sure, they have their downside -pollution, noise, - but no amount of environmental damage can ever take the sweetness out of a ride. However, a continuous increase in-the number of cars leads to serious congestion and escalate pollution caused by cars. Governments build new roads trying to improve the situation- but this means that they cut down trees and destroy more of the countryside.

2. The car is one of the biggest polluters today. Exhaust fumes from cars are the main cause of bad air quality, which can make people feel ill and have difficulty breathing. The problem is especially bad in some cities, where on days, when there is not much wind; a brown layer smog (mixture of fog and smoke) hangs in the air. The relatively inefficient

combustion of fuel in a car engine cause many hydrocarbon fragments to be left unburned. These fragments (mainly methane) help to form smog and are believed to be carcinogenic.

The incomplete combustion of fuel produces also carbon monoxide (CO). It is poisonous and at moderate concentrations can cause drowsiness and impair mental and physical alertness. Carbon monoxide emissions largely come from cars exhaust. Nitrogen oxides (NO) are formed within the cylinders of an engine during fuel combustion. They are major components of smog.

3. Hydrocarbons and nitrogen oxides in vehicle exhausts combine with one another in sunlight to produce ozone. The ground level ozone is major air pollutant. The photochemical smog is worst in traffic-congested cities on dry, hot summers, whereas sulphur based smog occurs on cold winter days. Photochemical smog is common when the vehicle engines are old and poorly maintained, as often occurs in developing countries. In some overpopulated cities such as Mexico-City and San Paulo almost all children suffer from coughs and wheezing, different forms of allergies. This is mainly due to the effect of ozone and other motor vehicle pollutants.

4. Air in large cities contains a great deal of dust – suspended in air minute solid particles. Some of them are toxic and can contain lead. Lead comes from petrol, it is emitted in tiny particles and if it is breathed in, can accumulate in the body and cause lead poisoning. Human being cannot excrete lead, so it accumulates lead in the body. Even in tiny concentrations, it can cause headaches, abdominal pains, and general tiredness. Today more cars are made to run on unleaded gasoline.

After Reading

Ex.3 Read the text more carefully and answer the questions.

1. What dangerous substances do car exhausts contain?
2. What process is CO produced by?
3. What part do car emissions play in formation of ground level ozone?
4. What can be done to reduce air pollution caused by cars?

Ex.4 Choose the statement that best expresses the main idea of each part.*Part 1*

1. The car is the biggest polluter.
2. The number of cars is increasing every year and this leads to increasing air pollution.
3. Exhaust fumes are the main cause of bad health problems.

Part 2

1. Many dangerous substances, CO, lead are contained in car emissions.
2. Exhaust fumes from cars are the main source of bad air quality which can cause many human illnesses.
3. There are too many cars on the city roads.

Part 3

Write a sentence that will best reflect the main idea of the part.

Part 4

Write a sentence that will best reflect the main idea of the part.

Ex.5 Which word is different? Why?

- | | | | |
|---------------------------------|---------------|------------------|--|
| 1) automobile | venture | vehicle | |
| 2) breathing | combustion | burning | |
| 3) install | fit | dismantle | |
| 4) accelerate | speed up | maintain | |
| 5) capable to do something well | inefficient | wasting (energy) | |
| 6) reduce | become bigger | decrease | |
| 7) emission | exhaust | absorption | |

Ex.6 Find synonyms to the following words or word combinations in the text and translate them.

1. disadvantage (1)
2. the condition of being so crowded with traffic that normal movement in area is impossible (1)
3. not to be able to breath easily (2)
4. burning (2)
5. tiredness (2)
6. stress (2)
7. an illness that you have when you eat, smell or touch a substance, which makes people sick (3)
8. gases discharged from the engine of motor vehicles (3)

Ex.7 Place the appropriate word from the list in each of the gaps below.

<i>combustion</i>	<i>traffic</i>	<i>photochemical smog</i>	<i>pollution</i>	<i>ozone</i>
-------------------	----------------	---------------------------	------------------	--------------

1. Concentrations of many dangerous substances in the air have crept up over recent years as streets have been congested with
2. Carbon monoxide is produced by incomplete ... of fuel.
3. Ground level ... has harmful effect.
4. ... is a complex chemical mixture.
5. Air ... problem crosses national boundaries.

FOCUS ON GRAMMAR

Infinitive

The <i>to</i> – infinitive is used
to express purpose
<ul style="list-style-type: none"> • <i>He went to London to study English.</i>
after certain verbs that refer to the future (agree, appear, decide, expect, hope, promise, refuse, want)
<ul style="list-style-type: none"> • <i>Tom promised to come.</i>
After would like, would prefer, would love
<ul style="list-style-type: none"> • <i>I would like to go to the cinema.</i>
After adjectives which describe feelings, emotions, willingness or unwillingness, person's character: happy, glad, sad, clever, kind, eager
<ul style="list-style-type: none"> • <i>I am happy to meet you.</i>

Ex.8 Find and translate the examples of the infinitive of purpose in the text Traffic and Air Pollution.

Ex.9 Match parts of the sentences from left and the right columns.

1. A water resources engineer deals with such issues as the quality and quantity of water ...	a. to solve problems.
2. Environmental engineers use logic and reasoning ...	b. to identify the strengths and weaknesses of alternative solutions and conclusions.
3. Environmental engineers need to study chemistry ...	c. to identify engineering problems and assess the potential impact of projects.
4. One of environmental engineers' specific tasks is to conduct studies of environmental condition	d. to prevent floods and supplies water for cities, industry and irrigation.

Round Table

Ex.10 Working in groups of three or four, considers the questions below. After that share your ideas with the class.

What are the main air pollutants in your city? Where do they come from?

How are people affected by the bad air quality?

What kinds of actions are needed to limit air pollution?

What have been done and what measures are now underway in other countries to improve the air quality in big cities?

What should be done in our city to clean up the air?

Can individuals do anything?

Using the Net

Ex.11 Surf the Net, make the report on this problem:

What are the main sources of transportation air pollution? Try to find solutions for transportation air pollution.

Unit 3

Water Pollution

*“Water, water everywhere,
nor any drop to drink”*

The Rime of Ancient Mariner
Samuel Taylor Coleridge



GETTING STARTED

- **What forms does water come to us?**
- **What is chemical formula of water?**
- **What is the total amount of water in the world?**

Key Vocabulary

Learn and revise the words

urgent (*adj*), shortage (*n*), per capita, consumption (*n*), oil spills, variety (*n*), effluent (*n*), sewage (*n*), aquatic (*adj*), accident pipeline, priority (*n*), keep pace with, promote (*v*), degradation (*n*), pump out (*v*), damage (*n, v*), contamination (*n*), disrupt (*v*), escalate (*v*), waste (*n, v*), regression (*n*), livelihood (*n*), unsafe (*adj*), demand (*n, v*), supply (*n, v*), average (*n*), split in (*v*)

TEXT I

Word Study

Ex.1 Translate the word combinations into Russian.

1. urgent problems
2. unsafe water
3. to keep pace
4. water-borne diseases
5. differences in per capita water consumption
6. to run out of something
7. a rich variety
8. rare species

Ex.2 Read the first part of the text and say if the following statements are true or false.

- 1) Accessibility to safe water has become a major challenge to the world as fresh water supplies are stretched to meet the demands of the population, industries and agriculture.
- 2) Worldwide demand is getting twice as much every ten years.
- 3) Diseases due to unsafe water account for 60% of infections in the developing world.
- 4) An average American uses 1000 liters of water a day.

The Water Crisis

1. One of the most urgent problems in the world today is the shortage of the clean water. Access to clean water is the basic human right. But acid rain, industrial pollution and sewage dumping, oil spills have made water undrinkable.

According to the UN, nowadays 40 per cent of the world have no access to clean water or sanitation, and as industrial and agricultural development everywhere in the world escalates, the situation is deteriorating. Worldwide demand for water is doubling every 21 years, more in some regions. Supply can't keep pace with demand, because of growing population, especially in the third world countries. Water-borne diseases account for 80% of infections in the developing world. More than 3 mln people die every year from unsafe water. The demand for water in many countries simply outruns the supply. Water is likely to become a growing source of tension and competition between nations. There are large differences in per capita water consumption between different countries. In some countries people are surviving on the daily ration equal to or less than a bucket of water, while average American uses 1000 litres of water a day.

2. According to the UN Commission on Water for 21st century more than half of the world's major rivers are going dry or are polluted. They are posing a threat to the health and livelihood of the people who depend upon them for irrigation, drinking and industrial water. Of the major rivers in the world the Amazon in South America and the Congo in the sub-Saharan Africa are the healthiest. The Yellow River in China is severely polluted.

Lake Baikal in Siberia with a depth more than a mile, contains one-fifth of the world's fresh water resources. The local people call it the Holy sea. It contains a rich variety of animals and plants, including 1.300 rare species that do not exist anywhere else in the world. It was declared a World Heritage Site in 1996. Now the environment around Lake Baikal is endangered not only because of massive volumes of industrial effluents, which pour into the lake every day, but by a joint Russian-Chinese plan to built a pipeline through the region which will pump 30 million tons of Russian crude oil to China every year.

After Reading

Ex.3 Read the text more carefully and answer the questions.

1. What made many water resources unsafe?
2. Why cannot water supply keep pace with the demand?
3. What can you say about per capita water consumption in different countries of the world?
4. What can you say about the extent to which world's major rivers are polluted?
5. Why is preservation of the largest resource of fresh water in the world under threat?

Ex.4 Choose the statement that best expresses the main idea of each part.

Part 1

1. Access to clean water is a basic human right.
2. We are running out of drinking water.
3. One of the most urgent environmental problems in the world is the shortage of clean water.
4. The world faces water crisis.

Part 2

Write a sentence that expresses the main idea of the paragraph.

Ex.5 Find English equivalents to the following Russian phrases in the text:

болезни, вызванные плохим качеством воды; источники напряжения между народами; потребление на душу населения; ежедневный рацион; угроза здоровью и существованию людей; сильно загрязненный; богатое разнообразие.

Ex.6 Match the words opposite in their meaning.

- | | |
|----------------------------|---------------------|
| 1. drinkable water | a. industrial water |
| 2. escalate | b. rare species |
| 3. drinking water | c. unsafe water |
| 4. health | d. disease |
| 5. polluted | e. deteriorate |
| 6. rich variety of animals | f. clean |

TEXT II**Word Study**

Ex.1 Match words from column A to B to make phrases. Translate the word combinations into Russian.

- | A | B |
|---------------|----------------|
| 1. industrial | a) life |
| 2. rich | b) problem |
| 3. urgent | c) effluents |
| 4. heavy | d) spills |
| 5. major | e) consumption |
| 6. toxic | f) leakage |
| 7. aquatic | g) variety |
| 8. oil | h) threat |
| 9. water | i) metals |

Ex.2 Before you read the text in detail skim through it quickly and choose 5-6 sentences that express the main ideas. Discuss them with the whole class. Then read the text carefully.

The Major Water Pollutants and the Main Ways of Water Pollution

1. There is a growing concern over the safety and quality of drinking water as it could be contaminated by wide range of chemicals, microbial and physical hazards that pose threat to health. The most important factor influencing the quality of water is the nature of wastes reaching water sources from domestic and industrial



effluents. Dangerous substances are substances, which are persistent, toxic and accumulate in living tissues causing chronic intoxication. A list of dangerous substances includes heavy metals as mercury and cadmium, certain pesticides, chlorinated industrial chemicals and solvents. It is only comparatively recently that we have become fully aware of implications of dioxin poisoning. Dioxins (TCDD) are formed by presence of carbon, oxygen, hydrogen and chlorine; in most cases heat is also a contributor. TCDD is one of the most toxic and mutagenic substances known to man. It now appears that its trace amounts can cause cancer, genetic deformities in man and animals.

Mercury which is one of the most dangerous substances has the ability to accumulate in sea plants and fish. Mercury poisoning from fish is not considered to be a risk, but fish from some fresh water lakes, is not considered suitable for human consumption. Many countries of the world, that tried to replace surface water contaminated with sewage by ground water as a safe reliable source of drinking water, may be now drinking water containing arsenic. People are at serious risk in 17 countries around the world - including China, Vietnam, Argentina and the US, where limits set by the World Health Organization are exceeded.

2. In many cases, sewage is treated and broken down in sewage plants before it is pumped back into lakes, rivers and seas. But it is often returned untreated. Water can usually clean itself of organic waste, but this process takes a long time. In some areas, too much untreated sewage is pumped out and the water never gets clean. Modern agriculture relies on large inputs of a wide range of synthetic chemicals to improve and sustain high agricultural yields. Fertilizers and pesticides washed off in the rain get into rivers, some pesticides fall into water through air drift from aerial spraying. Pollution also travels through (under) ground water. Organic and chemical pollutants kill fish and aquatic life.

3. Technological catastrophes are among extremely appalling sources of water pollution. The oil spill also has a less visible toxic effect: it reduces the level of oxygen dissolved in the water. As well as the fish and sea gulls, oil kills millions of tiny plants and animals on the deeper layers of the ocean. Contamination of water with oil occurs when water is injected into oil wells to increase production, in production of oil from oil shale and tar sands. Bulk transport of oil by sea is the most efficient way of distributing the large amounts needed by many countries. Besides that many countries use offshore oil production and bring oil ashore by submarine pipelines.

4. Water is life, we should take care about keeping it clean. Business culture should be changed and the environment should be given a higher priority. In the long turn a living river is more profitable than a dead one. And some say if they wanted to, the commerce powers could stop environment degradation. United Nations report on the state of the world's water resources declares that they will continue to diminish because of population growth, population, and climatic changes.

After Reading

Ex.3 Answer the following questions.

1. What factors influence the quality of water?

2. How are dangerous substances defined in the text?
3. How can TCDD affect human health?
4. How do fertilizers and pesticides get into rivers?

VOCABULARY REVIEW

Ex.4 Which word is different? Why?

- | | | |
|----------------|----------------|---------------|
| 1) storing | throwing away | dumping |
| 2) disrupt | create | destroy |
| 3) contaminate | purify | pollute |
| 4) effluent | waste | raw materials |
| 5) acquire | come to an end | run out of |
| 6) poison | food | nutrients |
| 7) release | hold | pump out |

Ex.5 Place the appropriate word from the box in each of the blanks below:

<i>efficient</i> <i>spills</i> <i>aquatic</i> <i>sewage</i> <i>pollutes</i> <i>pollutants</i> <i>domestic</i>

1. Oil ... the coastal waters and endangers fishing in the North Sea.
2. Both industrial and ... effluents often include heavy metals, like lead and mercury.
3. Engineering and other industrial processes make extensive use of a range of cleaning solutions and chemical solvents, these solvents are now common ground water
4. Bulk transport of oil by sea is the most ... way of distributing the large amounts of it needed by many countries, the risk of accidents involving oil ... cannot be totally

eliminated.

5. Sewage and agricultural chemicals falling into rivers, lakes and seas pollute them causing eutrophication and disrupting of the ... ecosystem.

6. Many rivers are biologically dead due to ... and agricultural chemicals falling into them.

Ex.6 Explain the words below.

1. effluent
2. to accumulate
3. living tissues
4. mutagenic substances
5. trace amounts
6. sewage
7. pesticide
8. leakage
9. eutrophication
10. appalling
11. oil spills
12. tiny

Focus on Grammar

Comparatives and superlatives

Ex.7 Complete the table with comparatives and superlatives from texts A and B. Revise the rules. Find more examples of adjectives in the texts and give their comparative and superlative forms.

	Adjective	Comparative	Superlative
One-syllable adj.	high	-----	the highest
Two or more syllable adj.	toxic profitable	more toxic -----	----- the most profitable
Two-syllable adj. ending in -y	healthy	healthier	-----

Irregular adjectives and their comparatives and superlatives

Adjective	Comparative	Superlative
Good	-----	-----
Bad	-----	-----
Little	-----	-----
Old	-----	-----
	-----	-----
Late	-----	-----
	-----	-----
Far	-----	-----
	-----	-----

Ex.8 Try to guess the comparative and superlative forms of the following irregular adjectives translate and remember them.

Latter, farther, the least, the best, older, elder, the furthest, less, the farthest, further, the oldest, worse, later, better, the worst, the eldest, the last, the latest

Ex.9 Complete these sentences with the right form of adjectives.

1. The Pacific is ... than the Atlantic. (large)
2. Today the streets aren't as ... as they used to be. (clean)
3. It's ... mistake people have ever made. (bad)
4. We should drink ... water. (healthy)
5. Water crisis is one of ... problems today. (acute)
6. We should stop environment degradation to make the situation(good)

Speaking

Ex.10 Working in groups of three or four, consider the question below. After you have reached some conclusion, share your ideas with the class.

- *What methods are usually used for purification of water?*

Using the Net

Ex.11 Find in the Internet the answers to the following questions. Make a report.

1. What is the best way to get rid of oil spills (consider different ways of removing oil spills, their advantages and disadvantages)?
 - a) What do you think is the average percent of oil removed from the surface of water in the case of collecting oil using floating barriers, special devices called skimmers?
 - b) Is there real possibility to pollute water and move oil into the deeper water by speeding up the natural process of oil decomposition using chemicals which break oil spills into little drops?

- c) Why is it difficult to maintain tankers with special design such as tankers with double hull skin?
- d) What is done to protect the tankers against corrosion?
- e) Does the special construction guarantee the absolute protection from, oil spills when a tanker moves at a full speed?
- f) Why does burning of oil on the water present a serious threat to sea organisms?

Ex.12 Imagine you are the members of university ecological club. You have to develop a plan of events for the students of your university to protect water recourses in our region.

Work in small groups, describe possible events, discuss with your partners. Then choose one of them and design a leaflet. (see Writing File p.86)

UNIT 4

Population and the Environment



GETTING STARTED

According to the United Nations predictions there will be a huge expansion of the global population 3 centuries from now to more than one hundred and thirty trillion people. The world's population is likely to be significantly older with the median age rising from twenty six as it is now to fifty in three hundred years' time.

In small groups of 3-4 use the Internet and consider the following questions, then share your ideas with the whole group.

1. What is the world population now?
2. What are the most heavily populated countries in the world?
3. What countries are characterized by high rate of birth?

Key Vocabulary

Learn and revise the words

Natural resources, increasing pressure, link (*n*), impact (*n, v*), generate (*v*), soil (*n*), exhaustion (*n*), consume (*v*), afflict (*v*), currently (*adv*), obvious (*adj*), damage (*v*), growth (*n*), urgent need, living standards, average, natural assets, spread (*v*), urban areas, pollutant (*n*), conserve (*v*), deteriorate (*v*), value, challenge (*n*), disaster (*n*)

WORD STUDY

Ex.1 Match a word from list A to word from list B. Translate the word combinations into Russian.

A	B
1. natural	a. exhaustion
2. urgent	b. conditions
3. average	c. areas
4. soil	d. growth
5. water	e. impact
6. population	f. shortage
7. environment	g. citizen
8. urban	h. resources
9. living	i. need

Ex.2 Read the text and find the word combinations from the previous exercises.

Population and the Environment

1. As the century begins, natural resources are under increasing pressure, constituting a threat to public health and development. Water shortages, soil exhaustion, loss of forests, air and water pollution, and degradation of coastlines afflict many areas. Most developed countries currently consume more resources, than they can regenerate. At the same time most developing countries with rapid population growth face the urgent need to improve their standards of living.

The link between population growth and the environmental impact seems obvious at first glance: more people consume more resources, damage more of the earth and generate more waste. This simple reasoning is true as far as it goes, but the larger picture of the link is more complex. A very small proportion of the population consumes the majority of the world's resources. The richest fifth consumes 86% of all goods and services. An average American's environmental impact is 30 to 50 times that of the average citizen of a developing country such as India. Per capita consumption in all industrialized countries is permanently growing.

2. It should be mentioned that worldwide about three-quarters of all current population growth is urban. As cities grow ever larger, their impact on the environment grows exponentially. Millions of people move from



countryside to the city to seek a better place to live, but they often find that their lives become more difficult. In many cities 25% to 30% of the urban population live in poor shanty towns or squatter settlements or they live on the streets. Of Rio de Janeiro's 10.6 million residents, for example, 4 mln live in squatter settlements and shanty towns. Nevertheless, cities in the developing countries continue to attract more and more people. Cities occupy only 2% of the world's land surface, but city populations have a disproportional impact on the environment. For example, London requires roughly 60 times its land area to supply its 9 mln residents with food and forest products. Because commerce and trade have spread dramatically in recent years, city residents consume resources not just from the surrounding areas but, increasingly, from around the world. Urban areas also export their wastes and pollutants, affecting environmental and health conditions far from the cities themselves. The UN coined the term megacities in the 1970s to describe cities with 10 million or more residents. Currently, there are 19 megacities, of which 15 are in developing countries.

3. It is necessary to balance the requirements of growing population with the necessity of conserving earth's natural assets. Improving living standards without destroying the environment is a global challenge. While the population growth has slowed, the absolute number of people continues to increase - by about 1 billion every 13 years. As population and demand for natural resources continue to grow environmental limits will become increasingly apparent. Slowing population growth would help improve living standards and would provide time to solve sustainability problems. Without practicing sustainable development humanity faces a deteriorating environment and may even invite ecological disaster.

After Reading

Ex.3 Read the text more carefully and answer the questions.

1. What is the link between the population growth and the environmental impact?
2. What can you say about the level of consumption in the different countries of the world? Is it possible to say that it is almost the same?
3. What part of all current population on the earth is urban?
4. What are the basic requirements for sustainable development?

Ex.4 Choose the statement that best expresses the main idea of each part.

Part 1

1. The world could support only 2 billion people if the entire world consumed at the rate Americans and Western Europeans do.
2. Although at first glance it seems that more people consume more resources, but on the other hand, one should take into consideration the inequality in the access to goods and services in the different parts of the world.
3. There is obvious link between population growth and the environmental impact.

4. A very small proportion of population growth consumes the majority of the world's resources.

Part 2

1. About three-quarters of all current population growth is urban.
2. As cities grow ever larger, their impact on the environment grows exponentially.
3. The larger the city the greater its impact on the environment.

Part 3

1. As the population grows, living standards are getting worse.
2. It is necessary to limit consumption of earth's resources.
3. Slowing population growth would provide time to solve sustainability problems.

VOCABULARY REVIEW

Ex.5 Fill in the gaps using the words from the box.

<i>population</i>	<i>urban</i>	<i>sustainability</i>	<i>deteriorated</i>	<i>consumption</i>
-------------------	--------------	-----------------------	---------------------	--------------------

1. In the past decade in every environmental sector, conditions have ..., or they are worsening.
2. The ... has been growing faster than food supplies.
3. Per capita ... in all industrialized countries is permanently growing.

4. Growing human numbers ... expansion, and resource exploitation do not bode (предвещать) well for the future.
5. Less population growth will provide time to solve ... problems.

Ex.6 Make up sentences using these phrases.

1. urgent need (1)
2. at first glance (1)
3. disproportional impact on the environment (2)
4. earth's natural assets (3)

Ex.7 Which word (word combination) is different? Why?

- | | | |
|--------------------|----------------|--------------------|
| 1) at first glance | at first sight | in the first place |
| 2) deficit | shortage | excess |
| 3) uncommon | average | usual |
| 4) change | conserve | transform |
| 5) exploit | misuse | use |
| 6) impact | access | effect |
| 7) roughly | exactly | approximately |
| 8) provide | restrict | supply |
| 9) decrease | increase | deplete |
| 10) tally (with) | match | deviate |
| 11) per head | per annual | per capita |

Focus on Grammar

Question types

1. <i>General question</i> (Общий вопрос).
<i>Do you play computer games? – Ты играешь в компьютерные игры?</i>
<i>Is this his book? – Это его книга?</i>
2. <i>Special question</i> (Специальный вопрос)
<i>Where are you going to move? – Куда ты собираешься переехать?</i>
3. <i>Alternative question</i> (Альтернативный вопрос) <i>Did they finish writing the article in the morning or at night? – Они закончили писать статью утром или вечером?</i>
4. <i>Tag-question</i> (Разделительный вопрос).
<i>My mother prefers meat to fish, does not she? – Моя мать предпочитает рыбе мясо, не так ли?</i>
5. <i>Question to the subject</i> (Вопрос к подлежащему).
<i>What makes you feel upset? – Что заставляет тебя грустить?</i>
<i>Who invites guests for the party? – Кто приглашает гостей на вечеринку?</i>

Ex.8 Write questions to which the words in bold are the answers. Begin with: How many, What, Who, Why, Where, Which.

1. Houses should be built **at a safe distance from factories**.
2. **The development of electro mobiles** will offer a key solution to the air pollution.
3. **Farmers** apply new methods of feeding the crops avoiding harmful fertilizers and pesticides.

4. **Developing** countries face the urgent need to improve their standards of living.
5. **4 mln** people live in squatter settlements and shanty towns.
6. The link between population growth and the environmental impact seems obvious at first glance **because more people consume more resources.**

Ex.9 Put all types of questions to these sentences.

1. The life in developing countries become more difficult.
2. Consumption of natural resources in all industrialized countries is permanently growing.

Speaking

Ex.10 Discuss the following questions in pairs.

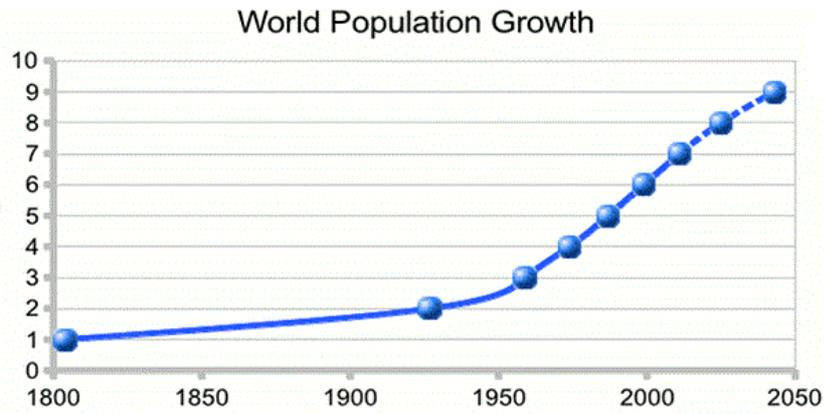
1. Why is the environment getting worse as the population grows? What ecological problems are connected to the population growth?
2. What can be done to reduce the impact of large cities on the environment?

Using the Net

Ex.11 Surf the Net and answer the questions:

- What economist was the first to put forward the theory of the overcrowded world? In what century did he live?

➤ How do you assess the implications of dramatic changes in the world's population?



Unit 5

Recycling

GETTING STARTED

1. What is rubbish?
2. Why is it one of the major environmental problems nowadays?
3. What measures should be taken to cope with this problem?

Ex.1 Read and compare this information with your ideas.

Rubbish is everything that you throw away or no longer have a use for.

Rubbish is anything from an empty crisp packet to a broken toy.

Rubbish can be solid, liquid or gas.

People usually talk about three different sorts of rubbish:

1. Domestic rubbish from households
2. Industrial and commercial rubbish from factories, offices, shops and schools
3. Hazardous rubbish which needs to be disposed of in a careful way to prevent pollution. For example, chemicals used to make paint.

Ex.2 People also use the word 'waste' when talking about rubbish. Do you know what is the difference between these words? Do you know any other similar words related to this topic?

Key Vocabulary

Learn and revise the words

Rubbish (*n*), throw away (*v*), decompose (*v*), household (*n*), bury (*v*), prevent pollution, hazardous (*adj*), recycle (*v*), landfill (*n*), reduce (*v*), manufacture (*v*), harmful (*adj*), increase (*v*), annually (*adv*), dispose of (*v*), liquid (*adj*), domestic (*adj*), take measures.

Ex.3 Match the words in columns that have similar meanings:

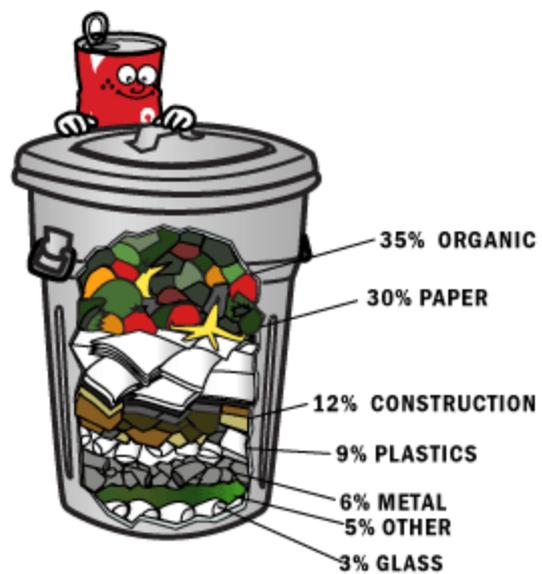
1. rubbish
2. throw away
3. hazardous
4. recycle
5. annually
6. make

- a. dangerous
- b. dispose of
- c. every year
- d. manufacture
- e. use again
- f. waste

Each household produces around 1 tonne of rubbish every year. The amount of rubbish throw away is increasing due to lifestyle changes and an increasing population.

We need to increase the amount of rubbish that is recycled because we cannot continue landfill or burn it forever.

What can we do? There is a popular concept Reduce – Re-use – Recycle.



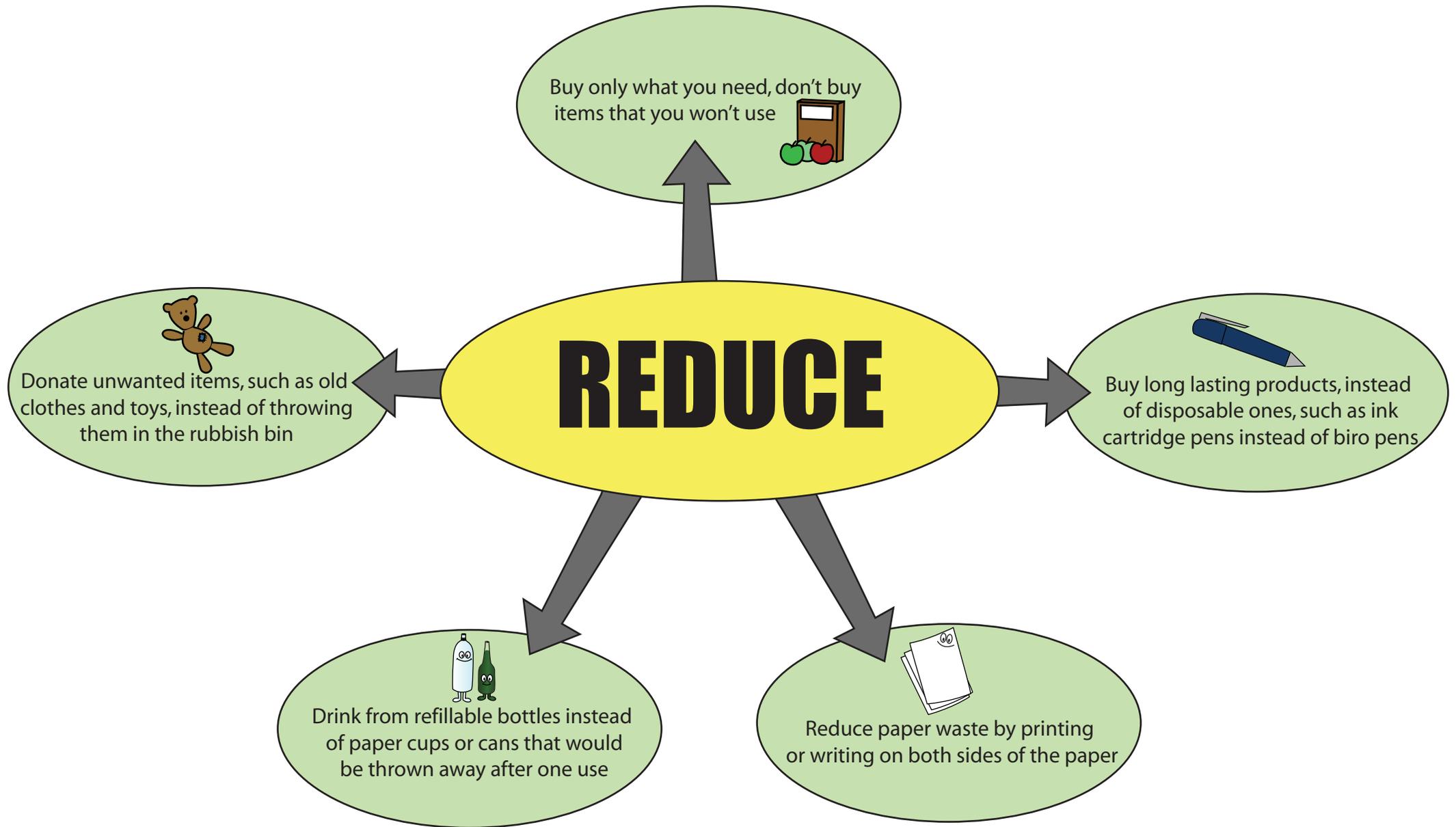
we

to

of

Ex.4 a) Have a look at the Reduce Diagram and say which of these things you do or might do.

b) What do you think about Re-use and Recycle? Can you make similar diagrams? Work in groups and share your ideas about what can be re-used and recycled.



Reading

**Ex.5 a) Read the first paragraph and find all the things that could be recycled.
Can you add other things to the list?**

b) Read the rest of the text and explain the reasons of recycling.



Recycling means turning the materials from waste into something new. Glass, paper, plastic, and metals such as aluminum and steel are all commonly recycled. Dead plants, fruit and vegetable scraps can be recycled through composting.

One reason that people give for recycling is that it reduces trash in landfills and incinerators. Another reason people recycle is to reduce the amount of raw materials and energy used in making things. Most of the time, it takes less energy to recycle trash than to throw it away. Recycling helps to minimize the whole size of landfills around the world.

Landfill

A landfill is a place where waste is kept. Landfills have a bad smell and look bad, therefore are usually located far away from where people live.

Once the waste is crushed into very small pieces, it is buried, but in the absence of oxygen, a dangerous gas called methane is created. This process is called anaerobic digestion. In some countries, the methane from landfills is used to generate energy.



Waste is usually buried in landfills, but it may first be sorted to remove any recyclable materials.

Battery recycling

Battery recycling is a name of the process of separately collecting such batteries so that they can be disposed of properly. Many batteries are thrown away in regular waste after they have been used. Batteries contain metals such as lead, copper or zinc. In the form that is used in the



batteries, these metals are very harmful to the environment – most are toxic. Collecting the batteries allows to extract some of the metals, which can then be re-used - they are not thrown away. The part that cannot be extracted or re-used is disposed in a form that it is less harmful to the environment.

Plastic recycling

Most people make about two kilograms of waste every day, and about 7% of this waste is made up of plastic products that can be recycled. Today, plastic can be recycled into products like picnic tables, park benches, and chairs.

First, plastic is collected and taken to a recycling center, where it is sorted out. When plastic is sorted out, symbols have to be printed on every recyclable plastic product used. There are two types of plastic: polyethylene and polymer. There are two kinds of polyethylene plastic, too: high density polyethylene (HDPE), and low density polyethylene (LDPE). HDPE plastic is usually used to make furniture, and LDPE plastic are usually things like milk jugs, plastic and grocery bags.



Recycling is an excellent way of saving energy and conserving the environment.

Ex.6 Mark the following sentences as True or False:

1. Paper and plastic are rarely recycled.
2. Composting is a way of recycling.
3. Recycling reduces a number of landfills.
4. It is impossible to sort rubbish before burying it at landfills.
5. Batteries contain substances that damage the environment.
6. HDPE and LDPE plastic are recycled to make useful things.

Ex.7 Look at the picture at the end of the text and find out what the symbols for types of plastic mean.**Vocabulary Development****Ex.8 Find in the text English equivalents to the following words and word combinations:**

1. мусоросжигательная печь
2. сырьё
3. анаэробное расщепление
4. вырабатывать энергию
5. перерабатываемый материал
6. свинец, медь или цинк
7. собирать батарейки
8. полиэтилен высокой плотности
9. мебель
10. сохранять окружающую среду

Ex.9 Match the words in columns that have opposite meanings:

- | | |
|-------------------|---------------|
| 1. throw away | a. bury |
| 2. solid | b. increase |
| 3. recycle | c. industrial |
| 4. reduce | d. liquid |
| 5. domestic | e. low |
| 6. hazardous | f. re-use |
| 7. high (density) | g. safe |

Focus on Grammar**Passive Voice**

- We make passive verb forms with the verb to be + past participle.

Renault cars are made in France.

- We often choose a passive structure when we are not interested in or it is not necessary to know who performs an action.

Glass, paper, plastic and metals are all commonly recycled.

- If we want to mention who performed an action we can use by.

More materials should be collected in recycling bins by the citizens.

(See page 83)

Ex.10 Find examples of the Passive Voice in the Text.**Ex.11 Change these active sentences into the passive so that they sound more natural.**

1. Most families throw away about 40 kg of plastic per year.
2. They manufacture electronic goods in China.
3. Somebody made this video game in Japan.
4. Each UK family uses an average of 500 glass bottles and jars annually.
5. Anybody can find lots of information on recycling by searching Google.
6. They will print the newspaper at 3 a.m.

Ex.12 Use either Active or Passive structures in the following sentences:

1. The use of plastic in Western Europe _____ (grow) about 4% each year.
2. 24 million of tonnes of aluminium _____ (produce) annually.
3. Glass that _____ (throw away) and ends up in landfills will never decompose.
4. Recycled paper _____ (produce) 73% less air pollution than if it was made from raw materials.
5. Up to 60% of the rubbish that ends up in the dustbin could _____ (recycle).
6. Plastic _____ (take up) to 500 years to decompose.

Ex.13 Do you have any idea how glass is recycled? Can you describe the steps of the process? Don't forget to use the Passive Voice.**Watching a Video****Ex.14 Do you know when World Environment Day is celebrated?**

- a) Watch the United Nations Secretary-General António Guterres video message on World Environment Day 2018 and say what environmental problem he speaks about.

<https://www.youtube.com/watch?v=3syYpQO7TFQ>

b) Watch the video again and try to answer the questions:

- 1) Why is this problem so relevant nowadays?
- 2) Which parts of the Earth suffer from this problem?
- 3) What are the solutions to the problem?

c) Now watch the video about Recycling plastic in Norway and see what solution they offer

<https://www.facebook.com/bbcnews/videos/10155614321468649/>

- 1) How many plastic bottles are recycled in Norway?
- 2) How much extra money do people pay for one bottle when they buy soft drinks?
- 3) How many times can the bottle be recycled?
- 4) Could this help solve the plastic problem?

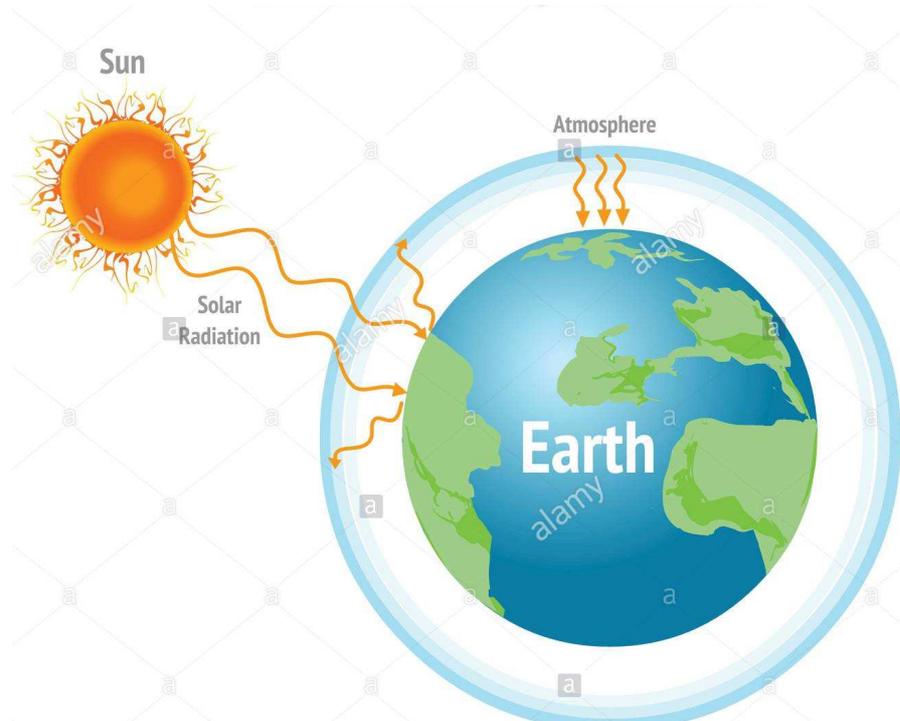
Ex.15 Design a leaflet about the importance of recycling. (see page 86)

UNIT 6

Greenhouse Effect

GETTING STARTED

1. What energy source drives our weather and climate?
2. In what forms does the Earth receive energy?
3. What gases in the atmosphere are called the greenhouse gases?
What did the name originate from?



Key Vocabulary

Learn and revise the words

drive (v.), visible (adj), infrared radiation (n), insulating blanket (n), escape (v.), feed (v), marsh (n), digestion (n), eventually (adv), additional (adj), photosynthesis (n), trap (v), fossil fuel (n), extraction (n), disastrous (adj), unacceptable (adj), support life, water vapour.

Word Study

Ex.1 Match the Russian words and phrases to their English equivalents.

- | | |
|------------------------------------|-------------------------------|
| 1. to drive (1) | a. БЫТЬ ПОХОЖИМ / ПОДОБНЫМ |
| 2. visible light (1) | b. одеяло, поверхностный слой |
| 3. to absorb (1) | c. переваривание |
| 4. blanket (2) | d. поглощать |
| 5. to be similar to (2) | e. поддерживать жизнь |
| 6. keep the heat from escaping (2) | f. видимый свет |
| 7. to support life (3) | g. удерживать тепло |
| 8. digestion (3) | h. управлять |

READING

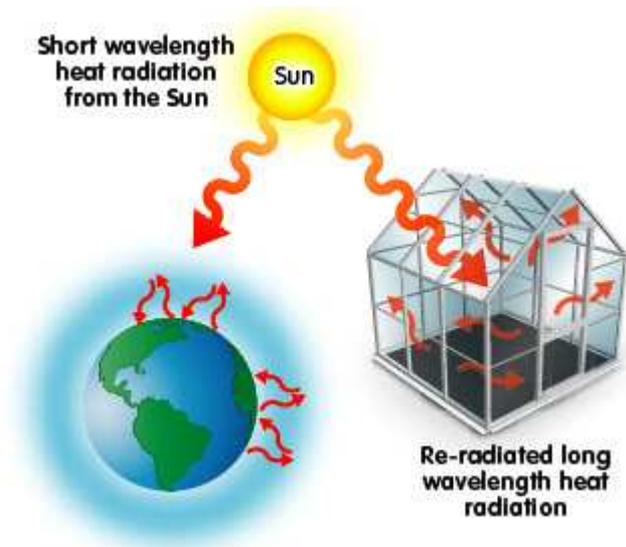
Before you read the text look at its title and try to explain it. Then read the text and answer the questions that follow. Find in the text the words from Ex.1 and translate the sentences with them.

Greenhouse Effect

1. The energy, which drives our weather and climate, comes from the sun. The Earth receives energy, largely in the form that we see as visible light. The atmospheric gases and others do not absorb light. Therefore, the visible light from the sun passes through the atmosphere to warm the earth. In turn, the warm earth radiates this energy back toward space as infrared radiation. But, on the way, some of it is absorbed by gases in the atmosphere, which are strong absorbers of infrared waves, they reradiate some of this energy back toward the earth.

2. Thus these gases act as an insulating blanket keeping the earth much warmer than it would be without them. If these gases were not present, all of the heat the earth

radiates would be lost into space. This is similar to the effect of glass in a greenhouse, which allows the sunlight in but keeps some of the radiated heat from escaping. Hence, the gases in the atmosphere, which absorb radiated heat, are called the greenhouse gases, and the process is known as greenhouse effect.



3. Greenhouse gases occur naturally in the atmosphere. The natural greenhouse effect keeps the temperature of the Earth some 30° C warmer than it would be otherwise. Without it the Earth would be too cold to support life, the oceans would freeze. Water vapour is the most important natural greenhouse gas. Its concentration in the atmosphere depends on the Earth's temperature. The concentration of other natural greenhouse gases is determined by the balance between the processes, which produce them ('sources') and those, which absorb them ('sinks'). The main natural greenhouse gases are:

- carbon dioxide (CO₂), which is released when living things breathe, die and decay, and which is absorbed by plants and the animals that feed on them;
- methane (CH₄), which is produced when organic material decays in the absence of air, as in marshes and wetlands, and by digestion in the stomachs of cattle and sheep, and is destroyed by chemical reactions in the atmosphere;
- nitrous oxide (N₂O), which is given off by vegetation and soils, and eventually breaks down chemically in the stratosphere;
- ozone (O₃), which is generated by the sun's rays in the stratosphere, and by chemical reactions in the lower atmosphere, and destroyed by other natural chemical reactions.

.2 Select the statement that best expressed the meaning of the paragraph.*Paragraph 1*

1. The energy which drives our weather and climate comes from the Sun.
2. The atmospheric gases are strong absorbers of infrared energy.
3. Energy received from the sun as visible sunlight heats the earth's surface, which emits energy, some escapes to space but some is trapped by greenhouse gases.

Paragraph 2

1. Absorption of infrared energy by atmospheric gases is similar to effect of glass in a greenhouse.
2. The atmospheric gases act as insulating blanket keeping the earth much warmer than it would be without them.
3. Greenhouse gases occur naturally in the atmosphere.

Paragraph 3

1. The most important natural greenhouse gases are water vapour, carbon dioxide, methane, nitrous oxide, ozone.
2. The concentration of CO₂, CH₄, N₂O, and O₃ is determined by the balance between the processes, which produce them, and these, which absorb them.
3. Water vapour is the most important natural greenhouse gas.

Vocabulary Review

Ex.3 In the paragraph indicated by the number in brackets, find the word or phrase that best fits the meaning given. Which word(s) means (mean)... ?

1. run (1)
2. soak something up or take something in (1)
3. heat(1)

4. emit(1)
5. bounce off (2)
6. get away (2)
7. take place (3)
8. in the other case (3)
9. release (3)
10. start to fall apart, rot (3)
11. produced (3)

Ex.4 Place the appropriate word from the list in each of the blanks below. Do not use more than one word.

receives trapped radiates keeps return

1. The Earth ... the energy from the sun as visible sunlight.
2. The warm Earth ... infrared energy back into space.
3. Some of it is ... by atmospheric gases.
4. Greenhouse gases ... additional heat to the Earth.
5. The natural greenhouse effect ... the temperature of the Earth about 30°C warmer than it would be otherwise.

Ex.5 Complete the table with missing forms:

Verb	Noun	Adjective
x	nature	
radiate		x
add		
x	disaster	
	x	(un)acceptable
x	atmosphere	
absorb		x
react		x
x		chemical
emit		x

Ex.6 Which word is different? Why?

reflect	bounce off	defect
drive	run	submit
radiate	emit	absorb
escape	get away	be held
decay	fall apart	restore
allow	ban	permit
otherwise	in case of	in the other case
warm	cool	heat
absorb	sink	release

Focus on Grammar

Use the First Conditional to talk about a possible situation in the future.

If + Present Simple, will + verb

Example: *If we **do not change** our philosophy of “live now; pay later”, our children **will pay** for our throwaway lifestyle.*

Use the Second Conditional to talk about unlikely or imagined situations in the present/future.

If + Past Simple, would + infinitive

Example: *If I **won** some money, I **would build** more national parks.*

Ex.7 Use the correct form of the subjunctive mood.

1. If the ozone layer (protect) us, we (not feel) harmful rays from the sun.
2. We (prevent) an irreversible environmental crisis, if we (change) our attitude to the environment.
3. If some years ago people (explore) the atmosphere more carefully, they (understand) the seriousness of the situation.

4. Air quality (improve), if we (not cut down) trees to build new roads.
5. If we (reduce) the emission of carbon dioxide, we (stop) the greenhouse effect from getting worse.
6. If we (not take) action to protect the earth's atmosphere, it (be unable) to protect us.

Ex.8 Complete the conditional sentences.

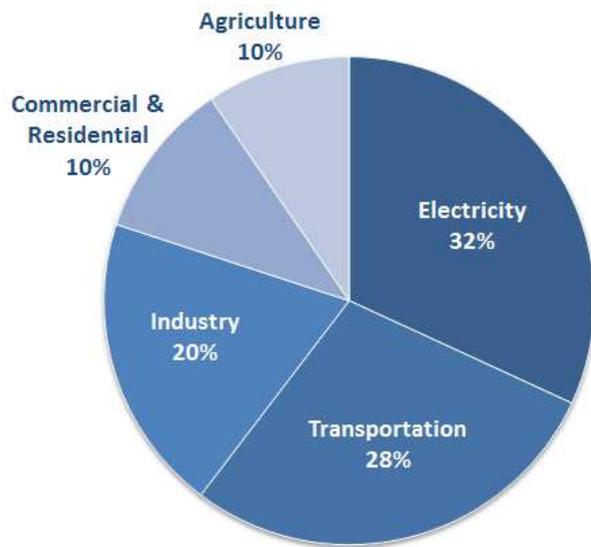
1. People would suffer from many diseases, if ...
2. If the greenhouse effect increases, ...
3. Large expanses of ice would melt, if ...
4. If some populated regions were flooded, ...
5. It will be more difficult to protect our world in some years, if ...

Describing a diagram.

Read the text describing the diagram of sources of greenhouse gas emissions by economic sector.

Greenhouse gases trap heat and make the planet warmer. Human activities are responsible for almost all of the increase in greenhouse gases in the atmosphere over the last 150 years.

The primary sources of greenhouse gas emissions in the United States:



- *Electricity production* generates the largest share of greenhouse gas emissions. It accounts for 32% of greenhouse gas emissions. Over 70% of electricity comes from burning fossil fuels, mostly coal and natural gas.

- The next sector is *Transportation* that is responsible for 28% of greenhouse gas emissions. They primarily come from

burning fossil fuel for cars, trucks, ships, trains, and planes. About 90% of the fuel used for transportation is petroleum based, which includes gasoline and diesel.

- Greenhouse gas emissions from *Industry*, that constitute 20%, primarily come from burning fossil fuels for energy as well as greenhouse gas emissions from certain chemical reactions necessary to produce goods from raw materials.

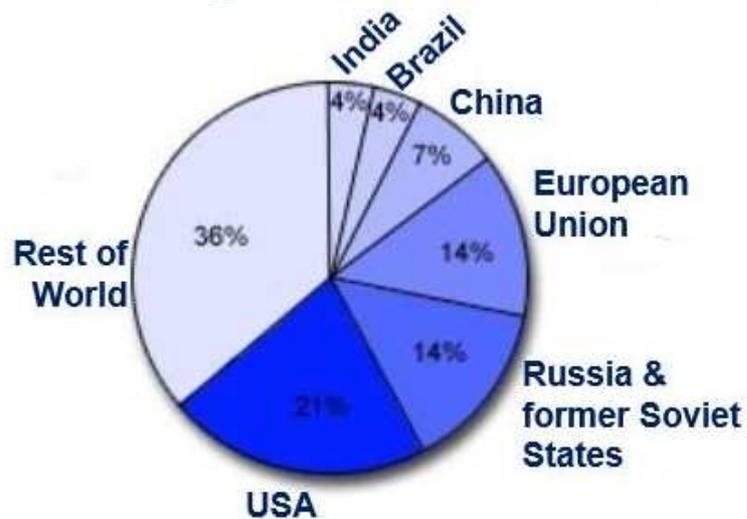
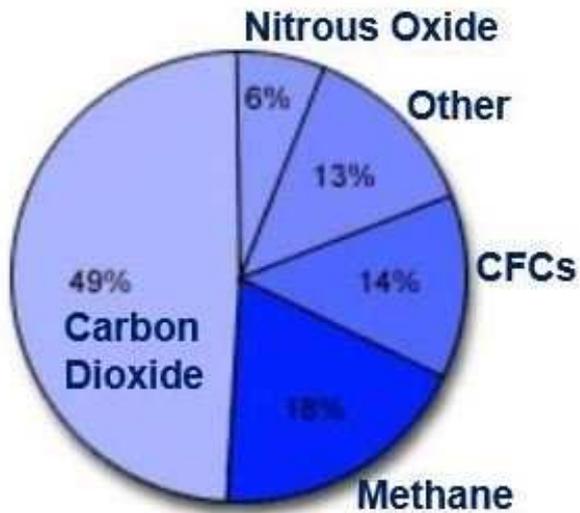
- *Commercial and Residential* make up 10% of greenhouse gas emissions that arise primarily from fossil fuels burned for heat, the use of certain products that contain greenhouse gases, and the handling of waste.

- Greenhouse gas emissions from *Agriculture* come from livestock such as cows, agricultural soils, and rice production and contribute 10% to the whole volume of greenhouse gas emissions in the USA.

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2011

<http://beef2live.com/story-sources-greenhouse-gas-emissions-0-104986>

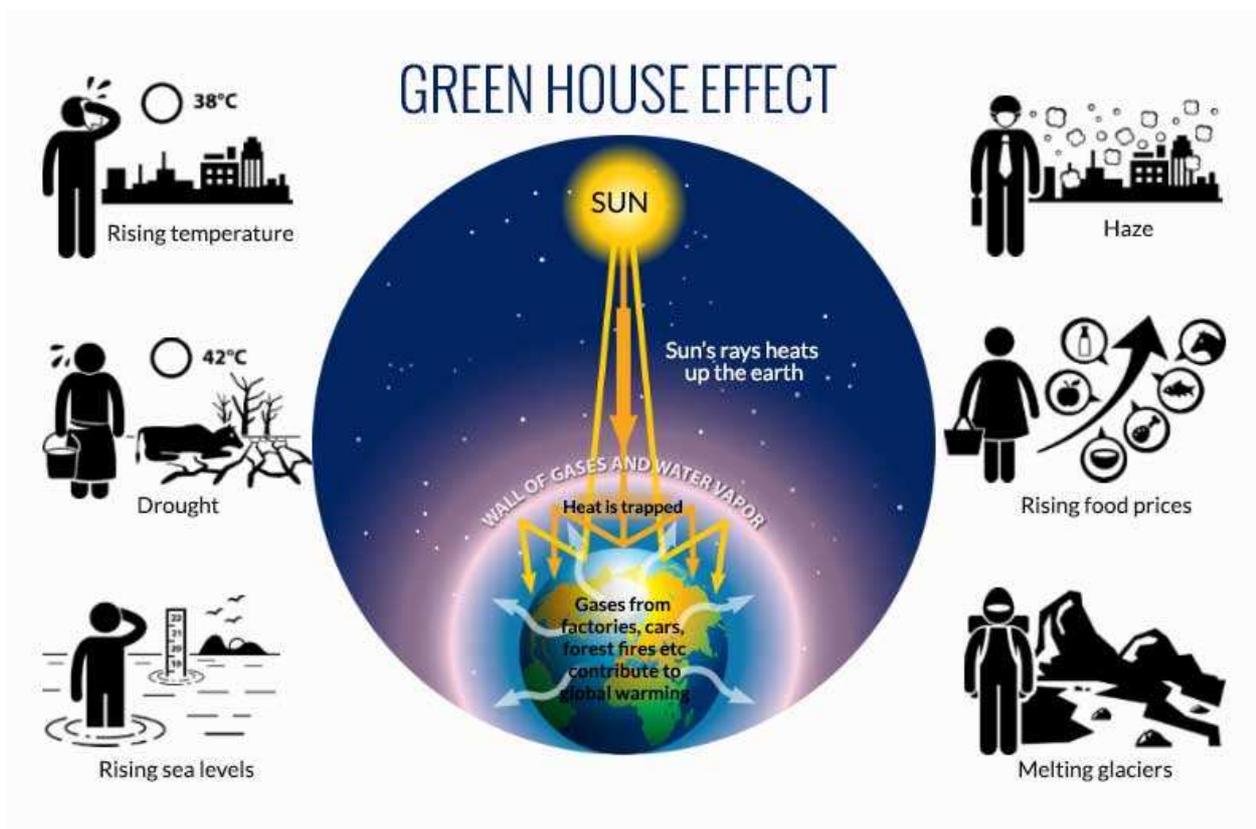
Now try to describe the following diagrams that depict sources of greenhouse gas emissions by type of gas and origin below.



Speaking

Ex.9 Answer the questions below

- Why can the visible light from the sun pass through the atmosphere to warm the earth? Why is some energy radiated by the warm earth into space absorbed by atmospheric gases?
- What would happen to planet if the greenhouse effect did not occur?
- What do you know about negative consequences of greenhouse effect?



UNIT 7

Global Warming

GETTING STARTED

1. What may lead to global warming?
2. What changes could be caused by global warming?



Key Vocabulary

Learn and revise the words

existence (n.), inhabitants (n.), release (n.), decrease (v.), entirely (adv.), drought (n.), decay (v.), soil (n.), completely (adv.), estimate (v.), greenhouse gases, essential (adj.), environmental refugees, fossil fuel, damage (n.), evidence(n.).

Word Study

Ex.1 Match the words from column A to B to make phrases. Translate them into Russian.

A	B
1. come to	a. factories, offices
2. lead to	b. energy
3. reduce	c. the danger
4. treat with	d. fuel
5. decrease	e. global warming
6. face	f. a rise (in)
7. burn	g. rain falling
8. run	h. droughts and floods
9. provide	i. carbon dioxide level

READING

Look at the dialogue taken from the *Financial Times* and guess what the people are talking about.

- A: If you go on selling these cars, there'll be global warming...The ice caps will melt... so what'll you do then?
- B: Sell boats.

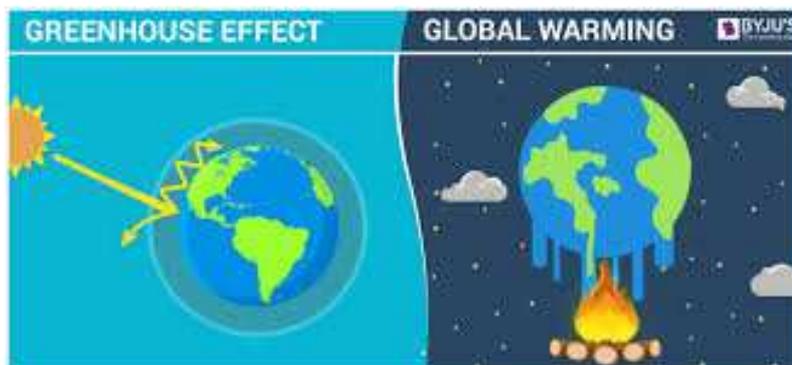
Global Warming

1. While the natural greenhouse effect is essential to life, a problem arises because human activity causes the release of additional greenhouse gases and these releases build up in the atmosphere. The rain forests have ability to slow down the greenhouse effect since during photosynthesis trees trap carbon dioxide and by doing it, reduce CO₂ levels in the atmosphere. But forests are being destroyed to make room for things like farms, mines, hydroelectric powers. An increase in greenhouse gas concentration leads to a rise in the greenhouse effect. Carbon dioxide comes in large quantities from fossil fuels - oil, coal and gas - burnt to provide the energy we need to run our homes, offices and factories, as fuel for transport and for other purposes and from burning forests. Methane comes from agriculture, coal mining, natural gas extraction and distribution and from waste disposed of on land. Nitrous oxide is thought to come mainly from farming and from burning fossil fuels and other materials. Ozone is produced in the lower atmosphere when nitrogen oxides, mainly from burning fuel, and organic compounds, some natural, some man-made, react in sunny weather.

2. All these gases have been increasing in the lower atmosphere over the last 100 years. The trend has increased in recent decades as world population has grown and as less-developed countries have industrialized. In addition, a powerful family of GHG is the entirely man-made, such as chlorofluorocarbons (CFCs) compounds containing

chlorine, fluorine and carbon. They have being widely used in aerosols and refrigerators, for making insulating and structural foams, as solvents for cleaning, etc.

3. An increase in the green house effect may lead to global warming, disastrous change in the climate. Using the computer models on which scientists base their predictions of



climate change, Greenpeace estimates that no more than 225 billion tonnes of carbon can be burned if global warming is to be limited to the increase of one degree centigrade. The United Nations Advisory group on Green House Gases concluded that temperature increases beyond 1C may cause extensive ecological damage. The total amount of fossil fuels currently due to be expected is 1000 billion tonnes, which if burnt would result in unacceptable temperature rise. Global warming threatens all of us with future droughts, foods and crop losses, that have the potential for massive human miseries. Changes in climate could dramatically decrease rain falling over enormous areas, turning more the land into desert. For example, Central Africa, South Asia, some part of the US might face the danger of drought and famine. In other places, over the oceans and in coastal zones, more rain might fall, and more storms, floods, hurricanes, typhoons, mudflows and slides might occur. Moreover, a rise in the earth's average temperature of only one or two degrees would probably cause a large amount of ice at the North Pole and South Pole (the polar ice caps) to melt and raise sea levels.

The Antarctic ice cap contains 90 per cent of the world's fresh water. If it melted completely it would raise the sea level by more than 70 meters, many densely populated areas would be flooded. Many of the world major population centers situated on the coast could stop their existence and disappear under water. About one billion people would lose their homes and become environmental refugees. At present, the fastest temperature rise is observed in the Antarctic Peninsula, during the past 50 years the Antarctic was warmed by 2.5 degrees centigrade. The increase in temperature affects

badly life of penguins, the inhabitants of the Antarctic. The warmer weather has made it more difficult for penguins to bring up young, as they nest in high rocks that do not trap snow or water because of yearly meltdown. There is also less krill plankton to eat. This led to a dramatic decline in their population.



The reducing of ice covering on North Pole by 40% and appearance of water on North Pole for the first time in 50 million years have given convincing evidence of global warming. American researchers during their recent expedition to the Pole have

observed a patch of open water (polynia) in the ice covering about 1 km in width.

Ex.2 Answer the questions:

1. In what way has concentration of the natural greenhouse gases been changing over the last 100 years?
2. What are "fossil fuels"?
3. What factors influence the process?
4. What are man-made greenhouse gases?
5. What products contain man-made GHG?

Ex.3 Select the statement that best expresses the main idea of the paragraph.

Paragraph I

1. Greenhouse gases have been increasing in the atmosphere over the last 100 years.
2. Human activity causes the release of additional greenhouse gases, which may lead to global warming.
3. An increase in the greenhouse effect may give a rise to disastrous consequences.

Paragraph 2

1. The problem of global warming has been made complicated with the growth of population and industrialization of less-developed countries.
2. A wide use of entirely man-made GHGs significantly worsens the problem.
3. Besides constantly increasing in the atmosphere additional GHG (CO₂, O₃, CH₄) caused by human activities the problem is adversely affected by entirely man-made CFSs.

Paragraph 3

Write sentence that express the main idea of the paragraph.

Pronunciation

Ex.4 Put the words from the box in the correct column, according to the pronunciation of the letters in bold.

Existence, **i**nhabitants, entirely, rise, environmental, fossil, provide, dioxide, distribution, disastrous, mine, **ai**rogen, widely, climate, misery, estimate, evidence, scientist, decline, **aiə**, prediction.

i	ai	aiə

Ex.5 Mind the pronunciation of the following words:

drought |draʊt|

refugee |,refju'dʒi:|

hydroelectric |,haɪdrəʊɪ'lektrɪk|

methane |'mi:θeɪn|

agriculture |'ægrɪkʌltʃə|

chlorine |'klɔ:ri:n|

flood |flʌd|

occur |ə'kɜ:|

width |wɪðθ| **but!** wide |waɪd|**Vocabulary Review****Ex.6 Find in the text English equivalents to the following words and word combinations:**

1. замедлить парниковый эффект
2. снизить уровень углекислого газа
3. сжигание ископаемого топлива
4. прогнозы об изменении климата
5. вызывать значительный экологический ущерб
6. опасность засухи и голода
7. ежегодное таяние
8. убедительное доказательство глобального потепления

Ex.7 Place the appropriate word from the list in each of the blanks below. Each word can be used only once.

greenhouse flooding rise increase essential

1. Natural greenhouse effect is ... to life.

2. ... gases go up into the Earth's atmosphere and stop heat from leaving the Earth.
3. An ... in the greenhouse effect may cause the ice at the North Pole and South Pole to melt and sea levels to rise, leading to serious ... in many parts of the world.
4. In other places, temperature will ... and there will be less rain, turning more of the land in to desert.

Ex.8 Which word is odd? Why?

extra	additional	left
build up	accumulate	clean up
take away	provide	supply
partly	mainly	principally
extract	mine	process
trend	tendency	measure
entirely	partially	completely
artificial	natural	man-made
permanently	constantly	temporary
evidence	proof	doubt

Focus on Grammar

We often use passive verb forms to say what happens to things or people or what was done to them.

Example: *The sun's rays in the stratosphere generate ozone. (Active)*

Ozone is generated by the sun's rays in the stratosphere. (Passive)

(See page 83)

Ex.9 Find in the text different cases of the Passive Voice and translate them.

Ex.10 Change the following sentences into the Active Voice.

1. A new study of climate change was led by British University.
2. Some powerful greenhouse gases are released by agriculture.
3. Now, in Central Russia, drought is being observed.
4. Many heavily populated regions will be flooded by the World Ocean.
5. The increase in the average temperature is being produced by global warming.
6. We are protected from different damaging effects by the ozone layer.

Ex.11 Change the following sentences into the Passive Voice.

1. Some gases transmit short-wave radiation.
2. The general warming is pushing up humidity levels.
3. All fossil fuels produce carbon dioxide.
4. Far East Development programme includes technological, social and economic changes.
5. Governments in developed countries should prohibit the export of toxic substances.

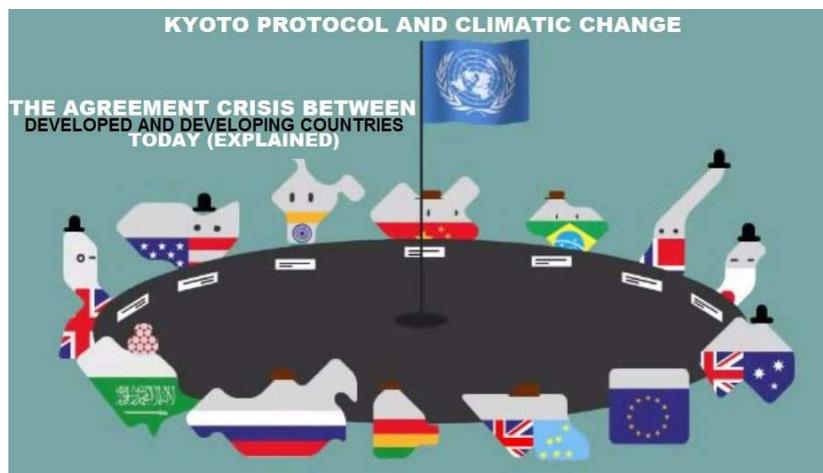
Using the Net

Ex.12 Go online to find the information and make the report about Kyoto protocol:

- What is it about?
- What countries signed it?
- Did our country join them?
- What are the main arguments of its opponents?

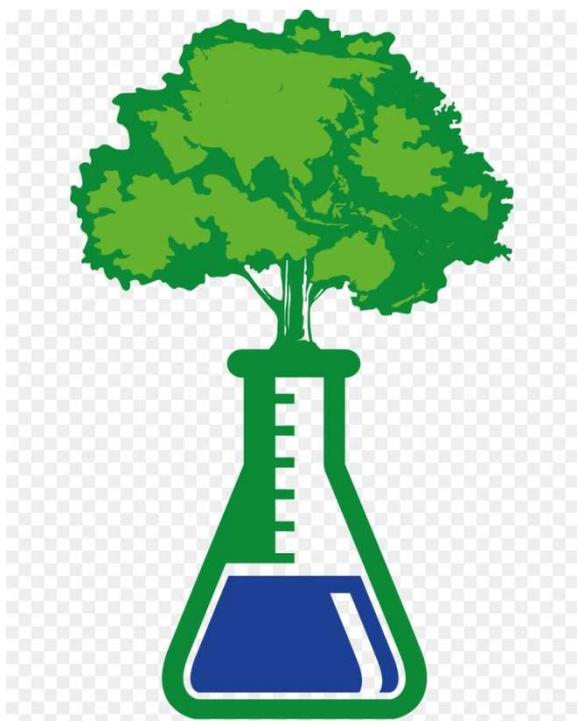
Round Table

Ex.13 Discuss pros and cons of Kyoto protocol.



UNIT 8

"A Double-edged Sword" of Chemistry and Environmental Problems



GETTING STARTED

In small groups discuss the following questions.

1. What people are called technocrats and what are called technophobes?
2. What are the implications of technical progress for the environment?
3. What are moving forces behind development of science and engineering?

Key Vocabulary

Learn and revise the words

Sustainable(adj.), abundant(adj.), cause(v.), occur(v.), human activity, vary(v.), public concern, nonpolluting, threaten(v.), natural resources, irreversibly(adv.), solution, be due to, a great deal, inherently(adv.), destroy (v.), matter (v.), preserve (v.)

WORD STUDY

Ex.1 Find in the text the English equivalents of the words and phrases:

1. делать нашу жизнь безопаснее и проще (1)
2. источники энергии (1)
3. быть недальновидным (2)

4. отдаленные результаты (2)
5. тип мышления (2)
6. понять (2)
7. растущий общественный интерес (3)
8. решение экологических проблем (4)

Ex.2 Pay attention to the pronunciation of the words, find them in the text and translate.

chemistry ['kemɪstrɪ]

abundant [ə'bʌndənt]

heart [hɑ:t]

disease [di'zi:z]

threaten [θreɪn]

supply [sə'plaɪ]

society [sə'saɪəti]

knowledge ['nɒlɪdʒ]

inherently [ɪn'hɪərəntli]

environmental [ɪnvaɪərən'mentl]

irreversibly [ɪrɪ'vɜ:səblɪ]

TEXT**"A Double-edged Sword" of Chemistry and Environmental Problems**

1. Chemistry is important - there is no doubt about that. It lies at the heart of our efforts to produce new materials that make our lives safer and easier, to produce new sources of energy that are abundant and nonpolluting and to understand and control the many diseases that threaten us and our food supplies. Although a strong case can be made that the use of chemistry has greatly enriched all of our lives, there is also a dark side of the story. Our society has used its knowledge of chemistry to kill and destroy. It is important to understand that the principles of chemistry are inherently neither good nor bad - it's what we do with knowledge that really matters.

2. Although humans are clever, resourceful, and concerned about others, they also can be greedy, selfish, and ignorant. In addition we tend to be shortsighted, we concentrate too much on the present and do not think enough about a long-range implication of our actions. This type of thinking has already caused us a great deal of trouble - severe environmental damage has occurred on many fronts. However, it is less important to lay blame than to figure out how to solve these problems.

3. The environment excites growing public concern due to realizing that at present time human activity has become varied and complex that it effects not only at local and national level, but the whole world. Ways of producing energy, using natural resources and build up of waste threaten to destroy Nature irreversibly. To preserve the environment of our planet development and growth in the world must be sustainable. Sustainable means not sacrificing tomorrow's prospects for a largely illusory gain today.

4. Solution to environmental problems cannot be found without their scientific understanding. An important part of the answer must rely on chemistry. One of the hottest fields in chemical sciences is environmental chemistry - an area that involves studying our environmental ills and discovering creative ways to address them.

After Reading

Ex.3 Read the text more carefully and answer the questions.

1. How do you understand the title of the text?
2. What other titles could you suggest?
3. What is a main reason to think that Nature is certainly under threat?
4. What kinds of human activities threaten to change fundamentally the balance of our global environment?
5. What is sustainable development?
6. Why does scientific knowledge play an important part in searching solutions to environmental problems?

Ex.4 Select the statement that best expresses the main idea of paragraph.

Paragraph 1

1. Chemistry is one of the fundamental sciences.
2. Chemistry has greatly enriched our lives.
3. The principles of chemistry are neither good nor bad. It's what we do with this knowledge that really matters.
4. Knowledge of chemistry may be used for the benefit of mankind as well as for destroying the life on the Earth.

Paragraph 2

1. Mankind has always been capable of great good and great evil.
2. We should avoid activities, which secure benefits in the short term at expense of dangerous implications for the environment and human health in the future.
3. It's more important to find out solutions to ecological problems than to figure out who are responsible for environmental damage.
4. Racing for short-term benefits without thinking about long-range consequences

gave rise to serious environmental problems, to solve them is a task of vital importance.

Paragraph 3

1. The ways in which human activities affect the environment are complex and can cause damage to Nature.
2. To preserve the environment of our planet development and growth in the world must be sustainable.
3. The impact of human activity on the environment has changed greatly and can threaten the live on the Earth.
4. The environment excites growing public concern.

Paragraph 4

1. Environmental chemistry can help to find the answers for many environmental problems.
2. Environmental chemistry is one of the "hottest" fields in the chemical sciences.
3. Finding solutions to environmental problems is based on their scientific understanding, environmental chemistry playing an important part in the process.

VOCABULARY REVIEW

Ex.5 Find the words and phrases in the text, translate them and make some sentences using them.

1. abundant (1)
2. disease (1)
3. to enrich (1)
4. there is a dark side of the story (1)

5. inherently (1)
6. don't think about long range implications (2)
7. to be short-sighted (2)
8. a great deal of trouble (2)
9. to figure out (2)
10. growing public concern (3)
11. to destroy Nature irreversibly (3)
12. to preserve the environment (3)
13. sustainable (3)
14. environmental ills (4)
15. creative ways (4)

Ex.6 Which word is different? Why?

at the heart	at the core	at the edge
accuse	lay blame	praise
ecologically friendly	polluting	non-polluting
matter	be of importance	be of little significance
damage	advantage	harm
dark side	background	disadvantage
implication	consequence	action
ills	utility	problems
disease	illness	health
take place	occur	miss
involve	include	exclude

Ex.7 Match English expressions with their Russian equivalents.

- | | |
|--------------------------------|-------------------------------|
| 1. sustainable development | a. научные знания |
| 2. human activity | b. сохранять окружающую среду |
| 3. scientific knowledge | c. природные ресурсы |
| 4. public concern | d. устойчивое развитие |
| 5. to preserve the environment | e. общественный интерес |
| 6. natural resources | f. деятельность человека |

Ex.8 Fill in the gaps using words in *Italics*.

damage threat problems environmental effort cause

- The world's ecological ... are the aggregate of local and regional pressures on the environment.
- The ... to the Nature can only be overcome if all nations work together.
- Greenpeace is an international organization that aims to protect the ... to make governments change their policy.
- Experience has taught us that actions and processes can ... the environment.
- Actions taken to protect one aspect of the environment can sometimes themselves ... other damage.
- There needs to be a major and growing scientific ... to understand the effect of human activities on the environment and our health.

Ex.9 Complete the table

Verb	Noun	Adjective
think		
		human
	environment	
		national
produce		
	development	
		creative

Focus on grammar

Present Perfect Tense. (Настоящее свершенное время).

We use the Present Perfect for an action in the past with a result now/

have + past participle

Example:

+ He has dressed himself.

- He has not dressed himself.

? Has he dressed himself?

Yes, he has. No, he has not. (No, he hasn't.)

Ex.10 Look through the text and find the structure with the Present Perfect.

Ex.11 Revise three forms of irregular verbs. (See the list in Grammar File)

Ex.12 Put the verbs in brackets into the Present Perfect.

1. We (to have) many major problems while working on this project.
2. She (to talk) to several specialists about her problem, but nobody knows why she is sick

3. Doctors (to cure) many deadly diseases.
4. Scientists (to split) the atom.
5. Ecologists (not find) solution to environmental problems .
6. Knowledge (to play) an important part in searching solutions to environmental problems

Ex.13 Make different types of questions using sentences from the previous exercise.

Speaking

Ex.14 Discuss in pairs the following questions.

1. What are the most promising lines of research in environmental chemistry?
2. How do you see the part of science in saving the environment? Give your reasons.
3. In what way has our view on Nature changed as compared with the view of previous generations?
4. What makes the main difference in perception of the world nowadays and in the past?
5. What is the field of environmental chemistry?



Round Table

Discuss in groups the questions and prove your points of view.

- *Most of our world's problems today result from the fact that it is controlled by huge corporations. Could people driven by need to make profits for their companies think about long-running consequences of their activities?*
- *Is there an economic reason for business to worry about environment?*
- *Is it possible to integrate economic growth and environmental good sense?*
- *Could business ever be green?*

SPEAKING FILE

Guide to presentation

1. Make a plan of your talk. This should include at least three sections:
 - introduction
 - development
 - conclusion
2. Write detailed notes of what you will say:
 - key points and key words
 - the action points you will stress
3. Prepare visual aids
4. Practice your presentation :
 - use simple and clear language
 - don't read from your notes

Look at these expressions. In which part of a presentation would you expect them to be used?

- .1. On this next slide you can see ...
- .2. To conclude, I want to tell you about ...
- .3. I'll be happy to answer questions at the end of the presentation.
- .4. Let's have a look at some statistics/ figures.
- .5. My name is ... and I'm a ...
- .6. Finally, a few words about ...
- .7. This brings me to the next point ...
- .8. Thanks very much for listening to my talk.
- .9. My main aim today is to tell you .../ I'm here today to tell you
- ...

Expressing your opinion on the problem/ topic

Expressing your opinion	
As I see it...	In my view/ opinion...
I think...	From my point of view...
To my mind...	I must say that...
I (personally) believe that...	It seems to me that...

Expressing your agreement and disagreement

Agreeing		Disagreeing	
When you agree	When you agree but not strongly	When you disagree, but you want to be polite	When you disagree strongly
Absolutely/ Exactly I couldn't/ can't agree more I absolutely/ fully/ certainly/ quite agree with you Right/ That's right/ You are right	I suppose so, but... I guess so Yes, maybe/ perhaps, but...	Yes, but ... I know, but... I take/see your point but... But don't you think...? I'm not so sure...	No, it isn't ... That's not true I can't accept that... I don't think that's right That's not the way I see it

GRAMMAR FILE

Present Continuous Tense

Form: to be + Ving

To be – am/is/are

+ I am doing

He is doing

They are doing

- I am not doing

He is not doing

They are not doing

? Am I doing?

Is he doing?

Are they doing?

Present Simple Tense

Form: V (V es)

+ I,/you/we/they do.

He/she/it does.

- I don't do

He doesn't do

? Do you do?

Does he do?

Present Perfect Tense

Form: have /has + V + -ed (Participle II)

Use: There are two main uses of the Present Perfect

- to express an action in the past. We are interested in the experience as part of someone's life.

They've lived all over the world.

- to express an action or state which began in the past and continues to the present.

I have been a student for a year.

For and **since** are common with this use.

We've lived here for six years.

I've known Alice since my childhood.

Question forms

1. *General question* (Общий вопрос).

Этот тип вопроса в английском языке еще именуют *yes / no question*. В данном вопросе обратный порядок слов и на первом месте вспомогательный (*do, does, is* и т.д.) или модальный глагол.

Do you play computer games? – Ты играешь в компьютерные игры?

Is this his book? – Это его книга?

2. *Special question* (Специальный вопрос)

Этот тип вопроса может быть задан к любому члену предложения. Используется ряд вопросительных слов: *What?* – что?; *When?* – когда?; *Where?* – где?; *Why?* – почему?; *Which?* – который? и другие.

Where are you going to move? – Куда ты собираешься переехать?

3. *Alternative question* (Альтернативный вопрос) Особенностью этого вопросительного предложения является выбор между двумя предметами, лицами, качествами, действиями и т.д.

Did they finish writing the article in the morning or at night? – Они закончили писать статью утром или вечером?

4. *Tag-question* (Разделительный вопрос).

Такой вопрос состоит из двух частей: первая – это само предложение целиком, с неизменным порядком слов, и без тех частей речи, к которым

собственно задается вопрос; вторая – краткий вопрос, в котором появится вспомогательный или модальный глагол, присутствующий в сказуемом первой части.

My mother prefers meat to fish, does not she? – Моя мать предпочитает рыбе мясо, не так ли?

5. *Question to the subject* (Вопрос к подлежащему).

В таком вопросительном предложении порядок слов прямой.

Вопросительное слово: *Who? What?* (кто – что). В настоящем времени употребляем глагол в третьем лице и единственном числе. Примеры:

What makes you feel upset? – Что заставляет тебя грустить?

Who invites guests for the party? – Кто приглашает гостей на вечеринку

Passives

Form

+ **It's done. It's being done. It was done. It has been done.**

It will be done.

- **It's not done. It's not being done. It wasn't done. It hasn't been done.**

It won't be done.

? **Is it done? Is it being done? Was it done? Has it been done?**

Will it be done?

Passives can also be formed with modal verbs.

Can it be done? It can't be done. It should be done. It must be done. It might be done.

List of English Irregular Verbs.

Verb (infinitive)	Past simple	Past participle	
be	was/ were	been	быть, находиться
become	became	become	становиться
begin	began	begun	начинать
break	broke	broken	ломать
bring	brought	brought	приносить, привозить
build	built	built	строить
buy	bought	bought	покупать
catch	caught	caught	ловить
choose	chose	chosen	выбирать
come	came	come	приходить
cost	cost	cost	стоить
cut	cut	cut	резать, рубить
dig	dug	dug	копать
do	did	done	делать
draw	drew	drawn	рисовать, чертить
drink	drank	drunk	пить
drive	drove	driven	водить машину
eat	ate	eaten	есть
fall	fell	fallen	падать
feel	felt	felt	чувствовать
fight	fought	fought	драться, сражаться
find	found	found	находить
fly	flew	flown	летать
forget	forgot	forgotten	забывать
forgive	forgave	forgiven	прощать
get	got	got (BrE) / gotten (AmE)	получать, добираться
give	gave	given	давать
go	went	gone	идти, ехать
grow	grew	grown	расти, выращивать
have	had	had	иметь
hear	heard	heard	слышать
hide	hid	hidden	прятать(ся)
hit	hit	hit	ударить
hold	held	held	держат

know	knew	known	знать
learn	learned	learnt/learned	учить, узнавать
leave	left	left	оставлять, покидать
lend	lent	lent	давать займы
lose	lost	lost	терять
make	made	made	делать, изготавливать
mean	meant	meant	значить, иметь ввиду
meet	met	met	встречать
pay	paid	paid	платить
put	put	put	положить
read	read	read	читать
ride	rode	ridden	ездить верхом
rise	rose	risen	подниматься
run	ran	run	бежать
say	said	said	сказать
see	saw	seen	видеть
sell	sold	sold	продавать
send	sent	sent	посылать
set	set	set	устанавливать
show	showed	shown	показывать
sing	sang	sung	петь
sit	sat	sat	сидеть
sleep	slept	slept	спать
speak	spoke	spoken	говорить
spend	spent	spent	проводить, тратить
stand	stood	stood	стоять
swim	swam	swum	плавать
take	took	taken	брать, взять
teach	taught	taught	преподавать, учить
tell	told	told	сказать
think	thought	thought	думать
throw	threw	thrown	бросать
understand	understood	understood	понимать
wear	wore	worn	носить (одежду)
win	won	won	побеждать
write	wrote	written	писать

WRITING FILE

Leaflets

Leaflets come in all shapes and sizes, but they all have to tell the user as much as possible in a small space.

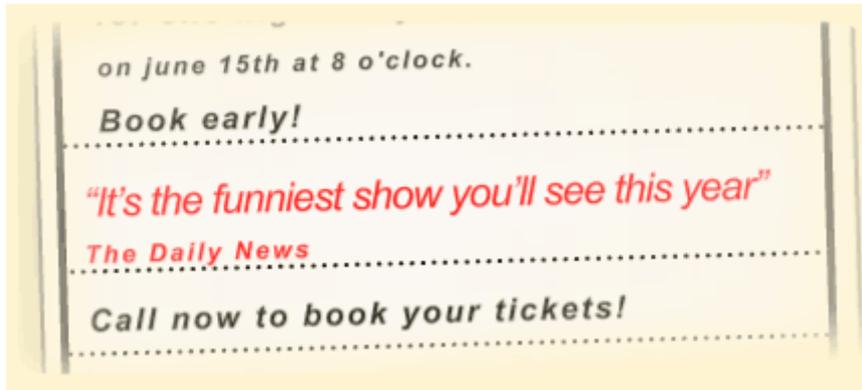
- The heading. Leaflets should have a clear, bold heading that catches the reader's attention and makes them want to read more.



- The message. You need to get as many facts as possible onto a leaflet – it needs to tell the reader everything they need to know and persuade them to do something, for example visit a restaurant or buy something.



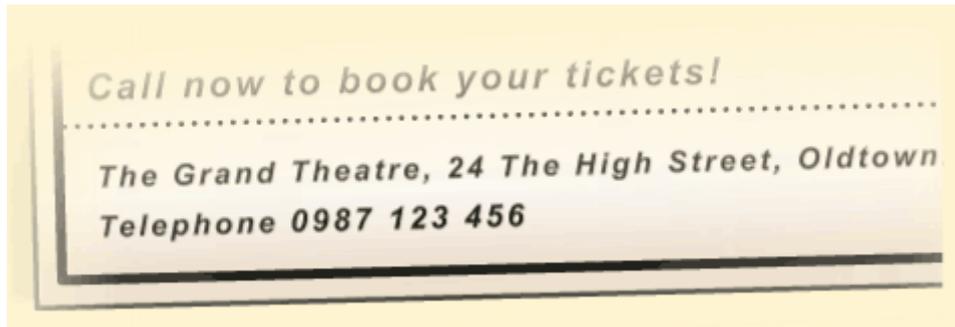
- Features. Most leaflets have short messages that stand out and tell the reader what's special about the thing the leaflet is advertising. These could be prices, reviews or special offers.



- A call to action. This is a clear message telling the reader what to do next, for example, Buy it now! or Call this number now for more details!



- Contact details. If a leaflet is advertising an event or a shop, for example, it must tell people where to go (an address), and how to get in touch (telephone numbers, website details and e-mail addresses).



- The design. Leaflets have to catch the reader's attention, so they need to be bright and engaging.

Keys**Unit 5**

1. Синонимы, обозначающие мусор, отходы, отбросы – rubbish /garbage /trash.
2. Мусор, сор, находящийся в неподобающем месте – litter.
3. Отходы, неиспользуемые или ненужные вещи – waste.
4. Хлам, рухлядь, вещи, не имеющие ценности – junk.
5. Обломки, осколки, крупный мусор – debris.



/

Unit 5

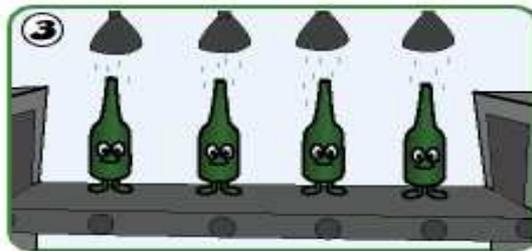
How glass is recycled



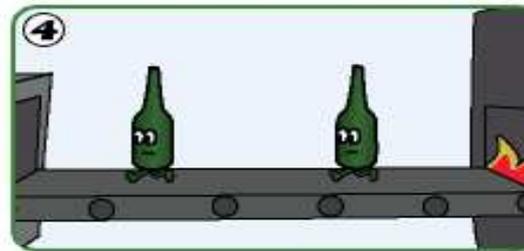
1 The consumer throws glass into a recycle bin.



2 Glass is taken from the bin and taken to a glass treatment plant.



3 The glass is sorted by colour and washed to remove any impurities.



4 The glass is then crushed and melted, then moulded into new products such as bottles and jars. Or it may be used for alternative purposes such as brick manufacture or decorative uses.



5 The glass is then sent back to the shops ready to be used again.



6 Glass does not degrade through the recycling process, so it can be recycled again and again.

Список литературы:

1. Корнева, О.Н. Место иностранного языка в системе формирования экологических ценностей в вузе. / О.Н. Корнева / Форум «Великие реки-2017». – Н. Новгород: ННГАСУ, 2017. С. 316-318.
2. Корнева, О.Н. Экологическое воспитание специалиста в процессе обучения иностранному языку в техническом вузе. / Корнева О.Н. / Сборник научных статей II Всероссийской научно-практической конференции «От традиций к инновациям в обучении иностранным языкам». – С-Петербург: Санкт-Петербургский государственный архитектурно-строительный университет, 2017. С. 60-72.
3. Кручинина Г.А. Интернет-технологии в обучении студентов иностранному языку: учебное пособие для вузов / Г.А. Кручинина, Е.Б. Михайлова, Н.В. Патяева. – Н. Новгород: ННГАСУ, 2014. – 87 с.
4. Михайлова Е.Б. Grammar for Engineering: учебное пособие для вузов / Е.Б. Михайлова. – Н.Новгород: ННГАСУ, 2015. – 58 с.
5. Николина, В.В. Формирование экологических ценностей у будущих инженеров-строителей в контексте устойчивого развития. / В.В. Николина, О.Н. Корнева. – Н. Новгород: ННГАСУ. Электронный ресурс: монография, 2016. – 256 с.
6. Орлова Л.Г. Понятийная основа терминов подъязыка «экология». / Л.Г. Орлова, Е.С. Корнилова – Н. Новгород: ВГУВТ, Вестник Волжской государственной академии водного транспорта. 2016. № 46. С. 272-276.
7. Орлова Л.Г. Работа с текстом как основа развития лексических и грамматических навыков (на материале английского языка). / Л.Г. Орлова, Е.С. Корнилова – Вольск: ВВИМО, XII Международная научно-практическая конференция, актуальные проблемы гуманитарных и социально-экономических наук. 2018. Т. 12. № 8. С. 21-24.
8. Федеральный государственный образовательный стандарт высшего образования по направлению подготовки 05.03.06 Экология и природопользование (уровень бакалавриата): утв. 11.08.2016 № 998 / Мин-во образования и науки Рос. Федерации. М, 2016. 21 с.

Корнева Ольга Николаевна
Михайлова Екатерина Борисовна
Корнилова Елена Сергеевна

SUSTAINABILITY: CHALLENGES AND OPPORTUNITIES

Учебное пособие

Подписано в печать Формат 60x90 1/16 Бумага газетная. Печать трафаретная.
Уч. изд. л. 5,2. Усл. печ. л. 5,6. Тираж 300 экз. Заказ №

Федеральное государственное бюджетное образовательное учреждение высшего образования «Нижегородский государственный архитектурно-строительный университет»
603950, Нижний Новгород, ул. Ильинская, 65.
Полиграфический центр ННГАСУ, 603950, Н.Новгород, Ильинская, 65
<http://www.nngasu.ru>, srec@nngasu.ru