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LIFE SAFETY AND ENVIRONMENT PROTECTION

Teaching guide

Almaty

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This teaching guide is for undergraduates of the specialty 6M073100 «Life
safety and environment protection» for improvement on their reading skills of
scientific and technical texts.

The teaching guide deals with the basics of translation, lexical difficulties of
translation of scientific and technical literature. Much attention is paid to the
terminology, which makes it possible to increase the active vocabulary by specialty.
All the main areas of grammar are covered in depth and further clarified through
practice exercises.

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Part I

Read and translate the text.

What is weather?

Wind, rain, cloud, and snow are all types of weather. Weather is different in different places around the world. In some places the weather is the same every day, and in other places it changes every hour. Weather can be calm or wild! Around Earth, there is a blanket of air called the atmosphere. Weather is the different conditions in the atmosphere. What types of weather do you like?

How does weather happen? Most of the weather on Earth happens because of two things - the sun, and air pressure. The sun heats some parts of Earth more than others, so air is warmer in some places and cooler in others. Areas of warm or cold air, called air masses, move around and bring different types of weather. When two masses meet, the weather changes.

You can't feel it, but the air is pushing down on you. This is called air pressure. Air pressure can change. Low air pressure brings rain and wind. High air pressure brings clear skies, which means hot, sunny days in summer, but cold days in winter.

What should we know about the weather? We need to know about the weather so that we can build the right type of homes, wear the right clothes, and travel at the right time. If people on ships and planes know about the weather, they can avoid bad storms. If farmers know about the weather, they can plant and cut down crops at the right time.

In 1992, weather forecasters warned people in the USA that Hurricane Andrew was coming. Sadly, 54 people died, but lots of people survived.

In the past, the Chippewa Indians in North America thought that the sun was in a bag all winter. They believed that every spring, a mouse bit a hole in the bag and the sun came out!

How can we predict the weather? A good way to predict the weather is to look at the types of cloud in the sky. Today, scientists use computers to predict the weather, but in the past, people watched nature. They watched what happened to plants, animals, the moon, or the stars. Many people still do this.

Some people think that cows or sheep can predict the weather. They think that if animals sit down, it will rain. People also believe that a red sky at night means good weather the next day, but a red sky in the morning means bad weather. Many years ago, scientists flew in hot-air balloons to measure the weather. Today, they collect information from weather stations, weather planes, weather balloons, and satellites, to understand what the weather will do. Millions of measurements are

taken every day. The information helps scientists to predict the weather. There are about 10.000 weather stations around the world.

Vocabulary.

Weather forecaster- someone who tells us how the weather will be (синоптик).

Blanket- a piece of material that covers something (попона, одеяло).

Condition- how something is (состояние, положение, условия, обстоятельства).

Farmer- a person who owns or manages a farm (фермер).

Sheep (plural sheep) - an animal used for meat and wool (овца, баран).

Predict- to say what will happen (предсказать).

Satellite- a machine that goes into space (спутник).

Measure- to find out how big or small something is (измерить).

Heat- something that is hot; to make something hot (жара, тепло, нагревать).

Exercise 1. Translate the following words.

1. Sun
2. Sky
3. Moon
4. Cloud
5. Rain
6. Stars

Exercise 2. Circle the correct words.

1. Around Earth, there is a blanket of water/air called the atmosphere.
2. Weather is the different conditions in the atmosphere/ocean.
3. Most weather happens because of the moon/sun, and air pressure.
4. An area of warm or cold air is called an air mass/pressure.
5. The air is falling/pushing down on you.
6. High/Low air pressure brings rain and wind.

Exercise 3. Write complete sentences, using these words: plant, avoid, build, crops, homes, storms, drive.

1. We need to know about the weather, *so that we can build the right type of homes.*
2. Drivers need to know about the weather, _____.
3. Farmers need to know about the weather, _____.
4. Pilots need to know about the weather, _____.

Exercise 4. Correct the sentences.

1. A good way to predict the weather is to look at the stars.

2. Today, scientists use cows to predict the weather.
3. In the past, people watched food to predict the weather.
4. Some people think that if animals stand up, it will rain.
5. People say that a red sky in the morning means good weather the next day.

Nouns which may be uncountable or countable

Many nouns which are generally uncountable can also be countable in certain contexts.

Some nouns are uncountable when we talk about the substance, material or abstract concept but countable when we talk about one specific item: chicken/ a chicken, light/ a light, stone/ a stone, hope/ a hope, education/ an education, hair/ a hair. For example:

- 1) I'm very interested in *education*.
- 2) It is important that she receives a good *education*.
- 3) There isn't much *light* in this room.
- 4) Is there a *light* in this room?

Some nouns which are uncountable when we talk about the material and countable when we refer to a specific thing have a particular meaning as countable nouns. For example, *glass* refers to a material. *A glass* refers to an item, that we drink from which is made of glass. It does not refer to a piece of glass: *wood/a wood, paper/ a paper, iron/ an iron, cloth/ a cloth*.

Some nouns which are usually uncountable can be countable when we refer to a particular variety: *wine/ an excellent wine, cheese/ a strong cheese, fruit/ a very sweet fruit*.

In informal English, drinks and some types of food which are normally uncountable can be counted, particularly when we are making an order in a café or restaurant: *tea/ three teas, coffee/ a coffee, soup/ two soups*.

Some '-ing' forms can be countable: *painting/ a good painting, drawing/ a few drawings*.

Exercise 1. Write *a* before the nouns which are being used as countable nouns.

1. - Beauty is subjective. She's *a* real beauty.
2. I am fortunate to have had ... very good education. ... education does not just take place at school.
3. My eyes are very sensitive to ... light. Is there ... light in there?
4. You've been ... great help to me. I'm sorry to ask you but I desperately need ... help.
5. I don't usually drink ... coffee. I'll have two teas and ... coffee please.
6. He has ... great love of music. Sometimes ... love can be very painful.

7. You'll get better at the job as you gain experience. I'm so glad I did it: it was ... wonderful experience.

8. The house is built of ... stone. This is ... beautiful stone.

9. fear is a perfectly natural human feeling. He has ... terrible fear of heights.

10. He was so hungry that he ate ... whole chicken. I don't like red meat but I do eat ... chicken.

11. I think that's ... really ugly painting. painting can be a very relaxing activity.

12. I usually eat ... fruit for breakfast. That's ... very unusual fruit. What is it?

13. Has this soup got ... potato in it? Would you like ... baked potato?

14. You shouldn't drink ... wine on an empty stomach. This is ... very nice wine.

Read and translate the text.

World weather

Weather can be very different around the world depending on the climate and the landscape. The climate is the usual weather for a place. The landscape is what the land is like.

And now let us talk about weather and climate. Weather can change, but climates stay the same most of the time. There are different types of climate because of the sun. The sun shines most strongly on the middle of Earth, called the equator. Places near the equator have hot climates with lots of hot, sunny weather. Places far from the equator have cold climates with cold, snowy weather. Places in between have temperate climates, where the weather is mild.

How can people adapt to a certain climate? Different things live and grow in different climates. Plants and animals adapt to where they live, for example, animals in cold climates often have thick coats to keep them warm.

Only plants with short roots can grow in cold climates because the ground is frozen for most of the year.

Very few plants can grow in deserts because there isn't enough water. Cactus plants survive because they can store water. If lightning hits a cactus, it can explode. The lightning boils the water inside the cactus and the steam makes part of the cactus explode!

Weather and seasons: Earth goes around the sun. For some of the year, one half of Earth is nearer the sun, so it has warmer weather called summer. At the same time, the other half is away from the sun, so it has colder weather called winter. This is how the seasons work.

Most places have summer and winter, but in temperate climates there are also seasons called spring and fall, when the weather isn't as hot as summer or as cold as winter. Places near the equator are usually hot, but they have wet and dry seasons.

Weather and landscape: the weather of a place can change depending on the landscape. If you climb a mountain, the air gets about 6 degrees centigrade (C⁰)- (43 degrees Fahrenheit) colder every 1,000 meters- (1,094 yards) that you climb. So there can be snow at the top of a mountain near the equator!

Land gets warm faster than the ocean, so in summer, inland places are warmer than places near the ocean. Inland places cool down faster, too, so they are colder in winter.

Plains have some of the hottest weather. They have hot summers, and cold, dry winters because they are far from the ocean and they can be protected by mountains, too.

Vocabulary.

Mild – not too hot or too cold (мягкий, теплый).

Plant – to put plants or seeds in the soil to make them grow (посадить, сеять).

Coat – a name for an animal's fur or skin (шерсть, мех).

Root – the part of a plant that holds it in the soil (корень).

Freeze – to be less than 0 degrees centigrade; to change into ice (морозить).

Frozen – so cold that it is very hard (замерзший, застывший).

Store – to keep something to use later (запасать, накапливать).

Lightning – a flash of very bright light in the sky, made by electricity (молния).

Boil – to heat a liquid like water until it's so hot that it changes into steam (кипятить).

Steam – the hot gas that water makes when it boils (пар).

Temperature – how hot or cold something is (температура).

Ocean – the salt water that covers most of Earth (океан).

Protect – to keep something safe from danger (защитить, обезопасить).

Far – not near (далеко).

Exercise 1. Translate the following words.

1. Equator
2. Hot climates
3. Cold climates
4. Temperate climates

Exercise 2. Complete the chart. Write five more places.

Hot climate	Cold climate	Temperate climate
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	Antarctica	

Exercise 3. Write weather or climate.

1. The usual weather for a place *-climate*.
2. This changes all the time _____.
3. This stays the same most of the time _____.
4. There are different types of this because of the sun _____.
5. Sun, rain, and snow are types of this _____.
6. This changes every season _____.

Exercise 4. Complete the sentences with the words: winter, short, animals, four, spring, summer, water, coats

1. Plants and *animals* adapt to where they live.
2. Animals in cold climates have thick _____ to keep them warm.
3. Plants with _____ roots can grow in cold climates.
4. Few plants can grow in deserts because there isn't enough _____.
5. We have colder weather in _____.
6. We have warmer weather in _____.
7. Temperate climates have _____ seasons.
8. The season after winter and before summer is called _____.

Exercise 5. Order the words.

1. place. / usual / a / climate / the / The / is / weather / for- *The climate is the usual weather for a place.*
2. warm / Land / ocean. / faster / gets / the / than.
3. hottest / have / the / weather. / Plains.
4. Plains / dry / have / winters. / summers / cold, / hot / and.

The article The indefinite article 'a' or 'an'

A_ or an? We use 'a' before consonant sounds and 'an' before vowel sounds.
But note:

1. A uniform- /ju:/
2. A European- /ju:/
3. An MP- /em/
4. An L-plate- /el/

Use: we can use the indefinite article before singular countable nouns: we cannot use it before uncountable nouns: I bought *a* chair but NOT I bought *a* furniture.

We use the indefinite article:

1) When we are referring to one thing but it is not one in particular: I'd like *a* banana.

2) When we refer to something for the first time. With the second reference, we use *the*: There's *a* man at the door. I think it's *the* man from the garage.

3) After *to_be* and *have_got* when we are describing someone or something, including someone's job: She's *a* head teacher. (BUT: She's *the* head teacher of Park school.) He's got *a* lovely smile. It's *a* nice day. (BUT: It's *the* nicest day we've had all week.)

4) With a unit of measurement (weight, quantity, time): £2 *a* kilo, three times *a* day and once *a* week.

5) In exclamations: What *a* lovely day!

The definite article: 'the'

Use: we can use the definite article before singular and plural countable nouns and before uncountable nouns.

We use it when we are referring to a specific thing or things. This includes:

1) When the content of the sentence specifies which particular one(s) we are talking about: *The* people next door have invited us round for a drink. I'll wear *the* dress I bought last week.

2) When something is referred to for a second time and therefore becomes specific: They've got a boy and a girl. *The* girl's at university now.

3) When we refer to a particular place, person, animal or thing and the speaker and listener know which one(s) is/are being referred to: *The* window cleaner's here. (our regular window cleaner). I think your keys are in *the* kitchen. (our kitchen or the kitchen here).

4) When there is only one: *the* world, *the* sun, *the* weather, *the* American Civil War.

5) Before some collective nouns referring to a whole group of people, including names of nationalities and political parties or groups: *the* British, *the* Italians, *the* Conservatives, *the* police, *the* government, *the* public, *the* army, *the* management, *the* electorate, *the* fire brigade.

6) Before some adjectives (used without a noun) to refer to the group in general: *the* rich, *the* poor, *the* unemployed, *the* disabled.

7) Before parts of the day: in *the* morning/*the* afternoon/*the* evening.

8) Before names of ships, newspapers and magazines and some names of musical groups: *the* National union of teachers, *the* QE2, the Daily mirror, *the* economist, *the* Berlin philharmonic orchestra.

9) Before superlatives and ordinals: It's *the* best film I've seen. That's *the* third time she's phoned.

10) Before names of musical instruments when we talk about playing them: Can you play *the* piano? (BUT I've just bought *a* piano).

11) Before the names of seas, rivers, groups of islands, islands called ‘The Isle of...’, chains of mountains, deserts, regions and a few names of countries: *the Atlantic Ocean, the River Nile, the Himalayas, the Sahara, the Southern Hemisphere, the Arctic, the north, south, etc. the USA, the Netherlands, the Sudan, the United Arab Emirates, the Ivory coast, the Philippines, the Bahamas, the Isle of Wight.*

The zero article (no article)

Use: we do not use an article before plural nouns and singular uncountable nouns when we use them in a general sense.

Meaning	Singular countable nouns	Singular uncountable nouns	Plural nouns
Definite use	<i>The</i>	<i>the</i>	<i>the</i>
Indefinite use	<i>a/an</i>	zero article	zero article

Books are very important to me.

Have you read *the* books I brought you last month?

Water is the best thing to drink when you’re thirsty.

Did you put *the* water in the fridge?

Other uses of the zero-article:

1) With proper nouns: Helen’s gone to Paris. I’m going away on Friday.

2) With meals: Have you had breakfast yet? (BUT: That was *a* lovely breakfast).

3) With school, class, college, university, home, work, church, bed, hospital, town when we talk about going to these places or being in them for their normal use: Danny’s gone to bed. She’s been in hospital for three weeks (BUT: There isn’t *a* hospital in *the* town).

4) With *by* + item of transport: Did you go by train?

5) With *next/last* + week, days of the week, etc.: next Wednesday, last night, next time.

Exercise 1. Complete the sentences with *a* or *an*, *the* or no article.

- ‘How much are *the* leeks?’ ‘They’re 80 pence *a* pound.’
- I went to ... wonderful concert by ...London Symphony Orchestra.
- ... local school is soon to be closed.
- I usually go to ... work by ... train.
- Is ... meat in ... oven?
- Is this... first time you’ve been to ... Isle of Man?
- He’s ... art teacher and she’s ... electrician.
- A lot of people give ... money to ... charity at this time of year.
- What ... beautiful face that child’s got!

10. ... British usually have ... butter on their bread.
11. ... life is very difficult for ... unemployed these days.
12. ... Leader of ... Opposition is in danger of losing her seat at ... next election.
13. I like to have ... cup of ... tea when I wake up in ... morning.
14. I saw ... fox this morning. I think it must have been ... same one that I saw last week.
15. Can I have ... apple?
16. Have you ever seen ... Acropolis in ... Athens?
17. ... police have had a lot of support from. ... general public over this issue.
18. shirts on ... washing-line should be nearly dry now.
19. ... people don't like him because of his selfish attitude.
20. I bought my sister ... book and ... bottle of ... perfume for her birthday but I don't think she liked ... perfume.

Exercise 2. Put a or an, the or no article in the gaps in this letter.

Dear ...-.... Jo and Ian.

This is ... picture of ... hotel we're staying at. We were lucky enough to get one of ... rooms overlooking ... sea and view is lovely. We had ... good journey over here and ... children quite enjoyed ... flight. They've got ... lovely room of their own and they think ... hotel's great. In general, we've all been having ... really good time. Unfortunately, Penny got ... very sunburned back on ... first day so she's had to wear ... T-shirt since then, but apart from that everyone's been fine. Jeremy's met ... English boy of about ... same age and they get on very well. They went into ... town on their own ... last night and bought themselves ... meal. And tonight they want to go out to ... disco - there are plenty to choose from here.

We've spent most of our time on ... beach so far. ... sea is really warm and clear so we've done lots of ... swimming. Tomorrow we're going on ... boat trip to one of ... islands and we're going to have ... barbecue on ... island. I'm really looking forward to that. Anyway, I'll give you ... ring when we get back and we'll see you ... next week.

Best wishes,
Sally and Robin

Read and translate the text.

All about clouds

Clouds look light, but even a small cloud can be as heavy as 100 elephants!
Every cloud is made of millions of tiny drops of water.

What shapes can clouds have? There are many clouds shapes, but they all come from three types of cloud. If we look at the type of cloud in the sky, this can help us to predict the weather.

Stratus clouds are low, thin blankets of cloud. These can bring light rain. Cumulus clouds usually bring good weather, but if they get too big or low they can change into cumulonimbus clouds – and that means storms! Cirrus clouds form high in the sky. They are made of ice crystals and they often mean that bad weather is coming.

Mist and fog: at night the ground cools down and it also cools the air above it. When the air gets cold, the water in it can turn into mist. Mist is like a very thin cloud.

Fog is like mist, but it's a thicker cloud that forms nearer the ground. It's very hard to see in fog and you can easily get lost, so it can be dangerous. Driving in fog is also dangerous, but cars have special fog lights to help other drivers to see them.

Storm clouds: when hot air rises on a hot day, it can change into storm clouds. In a storm, strong winds make the tiny drops of water inside clouds hit each other, and this makes electricity. The electricity moves between the cloud and the ground, and it makes very bright flashes of light called lightning. Lightning is about 30,000 degrees centigrade (54,032 degrees Fahrenheit)! Lightning heats the air around it and the air moves away very fast and makes a loud noise called thunder. There are about 40,000 thunderstorms every day!

Light travels faster than sound, so you see lightning before you hear thunder. What if we count the seconds between lightning and thunder? If you count three seconds, the storm is a kilometer (more than half a mile) away.

Lightning facts! There are many different types of lightning. Forked lightning and zigzag lightning are the most common, but there are also sheet lightning and rocket lightning.

About 100 lightning flashes happen every second on Earth, but most of them don't hit the ground. Lightning usually hits tall things like trees and buildings. The Empire State Building in New York in the USA is hit by lightning about 100 times every year. Lightning doesn't usually hit people, but a park ranger in Virginia in the USA has been hit seven times!

Lightning is almost six times hotter than the sun. It can even melt rock!

Vocabulary.

Stratus cloud- слоистое облако

Cumulus clouds- кучевые облака

Cirrus clouds- перистые облака

Cumulo-nimbuses- кучево-дождевые облака

Drop –a very small amount of liquid (капля).

Sky – (plural skies) where the clouds and sun are (небо).

Predict-to say what will happen (предсказать).

Blanket- a piece of material that covers something (попона, одеяло).

Ice crystal – a small piece of ice (ледяной кристалл).

Cool down – to become cooler (охлаждать).

Form – to make or be made (формировать).

Ground – the land that we stand on (земля, грунт, почва).

Dangerous – can damage something or someone (опасный).

Rise – to go up (подниматься).

Electricity – a type of energy (электричество).

Bright – with lots of light (яркий).

Lightning – a flash of very bright light in the sky, made by electricity (молния).

Heat- something that is hot; to make something hot (жара, тепло, нагревать).

Noise – a loud sound (шум).

Flash – a bright light that shines for a very short time (вспышка).

Second – it measures time; there are 60 seconds in a minute (секунда).

Park ranger – someone who works in a park (сторож парка).

Exercise 1. Match. Then write sentences.

1. Cirrus clouds are	a. low, thin blankets of cloud.
2. Cumulus clouds are	b. thick cloud near the ground.
3. Stratus clouds are	c. made of ice crystals.
4. Mist is	d. clouds that often bring good weather.
5. Fog is	e. very thin cloud.

Exercise 2. Order the words.

1. elephants. A / can / cloud / be / as / heavy / 100 / as.

2. of / are / Clouds / of / millions / water. / of / made / drops.

3. many / different / shapes. / are / There / cloud.

Exercise 3. Complete the sentences with the words: lightning, electricity, clouds, thunderstorms, thunder, tall.

1. When hot air rises on a hot day, it can change into storm _____.

2. Water drops inside clouds hit each other and this makes _____.

3. Electricity from the cloud makes bright flashes of light called _____.

4. When the hot air around lightning moves away, it makes _____.

5. There are 40,000 _____ every day.

6. Lightning usually hits _____ things.

Exercise 4. Answer the questions.

1. How can you know how far away a storm is? - *Count the seconds between lightning and thunder.*
2. What are the most common types of lightning?
3. How often does lightning hit the Empire State Building?
4. How hot is lightning?
5. Have you ever seen a thunderstorm?
6. Where do thunderstorms happen rather often?
7. What is the best place for shelter in such weather?

Attributive and predicative adjectives

When an adjective comes before a noun, it is attributive: She's an *intelligent young* woman. I love *strong* cheese.

When an adjective is separated from the noun and comes after the verb, it is predicative. An adjective can follow verbs like *be, become, get, seem, appear, feel, smell, look, sound, taste, make (+person), keep, stay, grow, turn*. It is a complement of the verb and not an object: The exam was really *difficult*. She seems *worried*. Hilary made me very *angry*.

A few adjectives can have a different meaning as attributive adjectives from their meaning as predicative adjectives: Jenny's a really *old* friend (I've known her for a long time). Margaret's quite *old* now (old in age). You're a very *heavy* sleeper (you sleep very heavily; you do not wake up easily). This suitcase is really *heavy*. His *late* father used to run the shop (his father is dead now). He's nearly always *late*.

A few adjectives can be used only as attributive adjectives or only as predicative adjectives:

Only predicative:

1) Some adjectives relating to health, including *ill, poorly, well/unwell, fine*: She's very *ill*.

2) Adjectives beginning with a, including *asleep, awake, afraid, alive, alone*: Do you feel *afraid*?

3) Some adjectives describing feelings, including *content, glad, pleased, sorry, upset*: He seems *upset*.

4) *near, far (away)*: It's not *far away*.

Only attributive:

5) Adjectives which qualify the noun, including *chief, main, only, particular, principal, sole*: You're my *only* friend.

Order of adjectives

When there is more than one adjective preceding a noun, they are generally placed in the following order:

What is it like?	How big?	How old?	What shape?	What color?	Where was it made	What is it made from?	Noun
				Red	Chinese	Silk	shirt
beautiful		old					house
old-fashioned						Handmade	doll
	Small		square	brown			envelope
	Heavy		oval				table

Exercise 1. Rewrite the sentences, putting the words into the correct order. If you think there should be a comma, add it in the correct place.

1. Absolutely holiday wonderful was the - *The holiday was absolutely wonderful.*
2. Enormous they old staying building grey are an in.
3. And looks now old he tired father.
4. Young met student charming we medical a.
5. Angry an man is young he aggressive.
6. Heavy is a he smoker very.
7. Very has happy him she made.
8. Heavy her gold a gave necklace he beautiful.
9. Close are friends extremely they.
10. Moment at rather seem the unhappy you.
11. Thoughtful a be man young seems very he to.
12. Impractical is time-wasting expensive the and project.
13. Beginning hair grey turn to is my.
14. Young actress a Diana successful well-respected and is.
15. Fine am now feeling I.

Read and translate the text.

Here comes the rain

People, animals, and plants all need water. Enough rain falls every day for 100 baths for every person on Earth! Sadly, some people don't have enough water because more rain falls in some places than others.

What is rain? Rain is water that falls from clouds onto the ground and into rivers, lakes, and oceans. When the sun heats the water, some of the water changes into a gas called water vapor. This is called evaporation. Water vapor rises into the sky where it cools and changes back into tiny drops of water that make clouds. The drops of water get bigger and then they fall as rain. Rainwater goes into rivers, rivers go into lakes and oceans, and the process starts again. This is called the water cycle.

Rainbows what are they? When there is rain and sun at the same time, raindrops break light from the sun into different colors and we see a rainbow. There are seven different colors in a rainbow – red, orange, yellow, green, blue, indigo, and violet. Sometimes you can see two or more rainbows in the sky at the same time. You can only see a rainbow if you are between the sun and the rain.

Have you ever seen a rainbow at night? Rainbows made in the light from the moon are called moonbows!

If you see a rainbow from a plane, it will look like a circle.

Our next thing to explain is monsoons. In tropical climates, where it's hot and wet, there are only two seasons. For half of the year, winds blow from the land to the ocean and there is a hot, dry season. For the other half of the year, winds blow from the ocean to the land and there is a long, wet season. When the winds change, and they blow from the ocean, it's called the monsoon. Monsoon winds bring heavy rain. People need monsoon rain for their crops to grow, but it can bring problems, too. One of the wettest places on Earth is Cherrapunji in India. About 11.5 meters (12.6 yards) of rain falls there every year!

Is rain good or bad? We need rain to help things grow, but if there is heavy rain, rivers sometimes overflow and make floods. Floods can happen anywhere, even in deserts. Floods can destroy buildings and crops, and they can kill animals and people. Floods can be good, too. The mud from a flood makes soil more fertile, so crops grow better.

In Bangladesh, there are floods after the monsoon almost every year. Bangladesh has the most fertile soil in the world!

Vocabulary.

Plant – to put plants or seeds in the soil to make them grow (посадить, сеять).

River – water on land that goes to the ocean (река).

Lake – a big area of water (озеро).

Ocean – the salt water that covers most of Earth (океан).

Gas – it is not a solid or a liquid; like air (газ).

Blow – to move (for wind) (дуть).

Grow – to get bigger (расти).

Overflow – to rise over the top of something (for a liquid) (переливаться).

Flood – where there is a lot of water where it is usually dry (наводнение).

Crop – a plant that a farmer grows (урожай).
 Kill – to make something or someone die (убивать).
 Mud – wet soil (грязь, слякоть).
 Soil- the ground that plants grow in (почва).

Exercise 1. Translate the following colors.

1. Red
2. Yellow
3. Violet
4. Green
5. Orange
6. Indigo
7. Blue

Exercise 2. Complete the sentences with the words: animals, overflow, fertile, deserts, soil, year.

1. If there is heavy rain, rivers sometimes_____.
2. Floods can happen anywhere, even in _____.
3. Floods can destroy crops and kill_____.
4. In Bangladesh there are floods almost every_____.
5. Mud from a flood makes soil more_____.
6. Bangladesh has the most fertile_____ in the world!

Exercise 3. Match. Then write sentences in order.

1. The sun heats	a. rivers and oceans.
2. Water vapor rises	b. the water.
3. Some water changes	c. and changes back into water.
4. Rain falls into	d. into the sky.
5. Drops of water fall	f. into water vapor.
6. Water vapor cools	g. from the clouds as rain.

Exercise 4. Answer the questions.

1. How many seasons are there in tropical climates?
2. Why do people need the monsoon rains?
3. Write two things that floods can do.
4. Have you ever seen a flood?

Exercise 5. Translate the following sentences using the key vocabulary above.

1. We sailed up river.
2. Overproduction caused butter mountains and wine lakes.
3. The whole town flooded when the river burst its banks.

4. Oxygen, hydrogen and nitrogen are all gases.
5. Do you prefer cooking with electricity or gas?
6. The vehicles got bogged down in the heavy mud.

Comparison of adjectives

Meaning	Comparative	Superlative
One syllable adjectives: young, big, short	younger, bigger, shorter	Youngest, biggest, shortest
Two syllable adjectives ending in - y: lovely, pretty, funny	lovelier, prettier, funnier	Loveliest, prettiest, funniest
Other two - syllable adjectives: present, annoyed, modern, careful, careless	more pleasant more annoyed more modern more careful more careless	most pleasant most annoyed most modern most careful most careless
Adjectives of three or more syllables: expensive, attractive, exciting, intelligent	more expensive more attractive more exciting more intelligent	most expensive most attractive most exciting most intelligent
Adjectives with irregular comparatives and superlatives: good, bad, far	better, worse, further/farther	best, worst, furthest/farthest

Exercise 1. Pam, who lives in London, is on the phone to her friend Debbie, who has recently moved to the countryside.

Pam: So how are you enjoying living in the new place?

Debbie: Oh, it's very nice. The house is much
(spacious) than the flat we had in London and one of the..... (good) things is being able to walk out of the back door into our own garden.

Pam: Mm, that must be lovely. So all in all, it's much (good) than London, is it?

Debbie: Well, I'm not sure I would say that. It's certainly (polluted) here and I suppose it's (stressful) and that must be good for me. But it's just so much (quiet) here and that takes some time to get used to. I suppose I miss the cultural diversity of London. Going out shopping in London was so much (interesting) that it is here. The people here are so much (varied) than they are in London.

Pam: I suppose that's true. But it's so much..... (busy) on the streets here in London. It must be nice to walk around somewhere that's much (crowded).

Debbie: Well, sometimes it is. Anyway, at least I'm coming up to London next weekend. I'm(excited) about that than I am about anything happening round here.

Pam: Oh dear, you seem to be thinking that you haven't made the (good) decision.

Debbie: Well, perhaps I'll feel(settled) here after a few months. Who knows?

Pam: Yes, probably. I personally think you're really lucky to be where you are. When I came to visit you, I thought it was one of the (beautiful) places I'd ever seen.

Read and translate the text.

Cold weather

About 11000 years ago, more than 30% of Earth was covered in ice! Earth is warmer today, but we still have cold weather.

Where is it cold? The coldest climates on Earth are near the North and South Poles. Most of the ice there never melts. Some ice has been there for more than two million years! The coldest place in the world is Vostok in Antarctica. The temperature there is usually about minus 57 degrees centigrade (minus 71 degrees Fahrenheit), but in 1987 it reached minus 89 degrees (minus 128 degrees Fahrenheit). That's the coldest temperature ever recorded!

Snow and sleet. When the air temperature is less than 0 degrees centigrade (32 degrees Fahrenheit), water drops in the clouds change into ice crystals. As more drops freeze, the crystals get bigger. Then, as the crystals fall through the clouds, they hit each other and form snowflakes. Snow can be fun, but it can make it difficult for people to travel. When it's cold, you must keep your hands, toes, and nose warm or they can numb. If you get too cold you can get hypothermia- this is when your body is so cold that it stops working.

If the temperature near the ground is more than 0 degrees centigrade (32 degrees Fahrenheit), snowflakes start to melt and they change into sleet. Sleet is a mixture of rain and snow. All snowflakes have six parts, but everyone has a different pattern.

What is hail? When air rises and carries water drops up to where the air freezes, the drops freeze and form hailstones. Small hailstones start to fall, but they are pushed up again by more rising air, and another layer of ice forms on top of the hailstone. This keeps happening until the hailstones are heavier than the air, and then they fall to the ground. If you cut a hailstone in half, you can count how many

times this happened by counting the layers of ice! Most hailstones are very small, but the biggest hailstone ever recorded was almost 18 centimeters (7,1 inches) wide. That's as big as a soccer ball!

What are blizzards? A heavy snowstorm with icy winds and temperatures less than minus 12 degrees centigrade (10 degrees Fahrenheit) is called a blizzard. Blizzards can happen very quickly and the snow can cover buildings, cars, and trains. Power cables can fall down, leaving people in their homes with no electricity. In a strong blizzard you can't see where the sky meets the ground. This is called a whiteout. In whiteouts, planes can crash and birds can fly into the ground! Heavy snow can also make avalanches happen - this is when a lot of snow falls down mountains very quickly. Avalanches cover everything as they move.

Vocabulary.

Temperature – how hot or cold something is (температура).

Ice crystal – a small piece of ice (ледяной кристалл).

Reach – to get to (достигнуть).

Record – to write down what happens (записывать).

Freeze – to be less than 0 degrees centigrade; to change into ice (морозить).

Frozen – so cold that it is very hard (замерзший, застывший).

Difficult – not easy (тяжелый).

Numb – so cold that you can't feel anything (онемелый, окоченелый).

Carry – to take (нести).

Push up - to make something move up (сдвигать).

Power cable – it carries electricity from place to place (электрический кабель).

Exercise 1. Translate the words.

1. Snow
2. Hail
3. Sleet
4. Ice

Exercise 2. Match the sentences.

1. Biggest hailstone ever recorded	a. 0 C ⁰
2. Parts of a snowflake	b. 11,000 years ago
3. The temperature when water freezes	c. minus 89 C ⁰
4. 30% of Earth covered in ice	d. two million years
5. Some ice has been near the Poles	e. 6
6. Coldest temperature ever	f. 18 centimeters

Exercise 3. Number the sentences in order.

1. Rising air carries water drops up into the sky.
2. Hailstones are pushed back up by the rising air.
3. Hailstones become heavier than the air.
4. Heavy hailstones fall to the ground.
5. Water drops freeze and form hailstones.
6. Another layer of ice forms on the hailstones.
7. Small hailstones start to fall.

Exercise 4. Translate the following sentences.

1. Water freezes below 0 degrees centigrade.
2. Rain changes into ice crystals below 0 degrees centigrade.
3. If your fingers get very cold, they can go numb.
4. If the temperature near the ground is above 0 degrees centigrade, snow changes into sleet.
5. When water drops freeze high up in the air they form hailstones.
- 6) In a whiteout, planes can crash.
- 7) When you can't see where the sky meets the ground, it's called a blizzard.
- 8) A heavy snowstorm is called an avalanche.

Exercise 5. Write about blizzards. Use these words: whiteout, cover, power cable, cars, fall down, buildings, electricity.

Simple and Continuous aspects

Verbs forms can use either the simple aspect or the continuous aspect.

The infinitive can also be used in the simple or continuous aspect: That child is too young *to play* with matches (infinitive with 'to'). That child is too young *to be playing* with matches (continuous infinitive with 'to'). You shouldn't *work* so hard (modal verb + infinitive). You shouldn't *be working* so hard (modal verb + continuous infinitive).

The simple aspect

When we use the simple aspect, we view the action or series of actions as a whole.

The simple aspect indicates one or both of the following:

- 1) That an action or series of actions is complete.
- 2) That the situation is permanent or is regarded as permanent.

We can use both dynamic and stative verbs in the simple aspect.

Dynamic verbs are verbs which describe actions, e.g. go, ask, walk, explain, work.

Stative verbs are verbs which do not describe actions: they describe feelings, thoughts, wishes, the senses and states of being, e.g. believe, belong, know, smell, understand, want.

The continuous (or progressive) aspect

When we use the continuous aspect, we view the action or series of actions in progress. The continuous aspect does not describe the whole event.

The continuous aspect indicates one or more of the following:

1) That the action or series of actions are in progress. We view the action at some point between its beginning and its end.

2) That the action is not complete.

3) That the situation is temporary.

When we use the continuous aspect, we describe an activity in progress. We therefore use the continuous aspect with dynamic verbs but not with stative verbs.

Exercise 1. Put the verbs in brackets into the tense indicated. Choose between the simple aspect and the continuous aspect.

Jenny and Francesca, two friends, are talking.

J: So what is it that *is worrying* (worry - present) you?

F: Well, I just ... (not see - present) a way out of my problems with my boss.

J: Why? What ... (go on - present perfect)?

F: Well, we ... (go out - past) for dinner about a month ago and I ... (think - present) he ... (assume - past) that I ... (be interested - past) in going out with him regularly, but I'm not.

J: ... (you/tell - past) him that?

F: Yes, of course I have, but he just ... (not seem - present) to understand. Take yesterday for example. I ... (work - past) hard on my monthly report when he ... (come up - past) to me and ... (put - past) his arm round my shoulder. I really ... (not like - present) him doing that.

J: No, of course. I ... (suppose - present) he ... (not believe - present) you're not interested in him.

F: No. And he ... (get - present) worse all the time. And I ... (get - present) more and more fed up with it. In fact I ... (think - present) of leaving.

J: But ... (you really want - present) to leave?

F: Well no, but I ... (not want - present) to be treated like this. Oh well, he's not here today, thank goodness. He ... (attend - present) a conference in Birmingham ... (expect - present) he ... (talk - present) to all the attractive women and ... (try - present) to find someone to have dinner with.

J: I can tell you really ... (dislike - present) him.

Stative and dynamic verbs

Dynamic Verbs - activities, e.g. drive, watch and listen.

Stative Verbs - a state of being and not an activity. These include:

- 1) Feelings - love, hate.
- 2) Thinking/believing - think, suppose, expect.
- 3) Wants and preferences - want, need, prefer.
- 4) Perceptions and the senses - look, smell.
- 5) Possession - have, own, belong.
- 6) Being/seeming - be, seem and appear.

Some verbs which are normally stative verbs can become dynamic verbs with some change in meaning: I *hope* to see you this weekend (expresses a wish). *I'm hoping* to see you this weekend (quite a common use. In the continuous form, *hope* becomes more of a deliberate action now in progress.) I *think* it's a good idea (expresses opinion). You are very quiet, what *are you thinking* about? (question about the activity of thinking). He's a very foolish person (description of something about his character) He's *being* very foolish (description of how he's acting/behaving at the moment). This wine *tastes* good (describing the effect on one of the senses). Amy's *tasting* the wine to see if it's all right (describing the activity of tasting).

Exercise 1. Complete the gaps using the verbs from the box. Each verb is used once as a stative verb and once as a dynamic verb. Put the verbs into the appropriate present simple or present continuous form.

see	think	admire	appear	have
expect	weigh	look	be	represent

1. How much do you weigh? About 60 kilos.
2. We ... dinner at the moment so I'll phone you back in half an hour if that's O.K.
3. Harry's been in his room for ages. He ... at all his old photographs.
4. I really ... Helen. She's an excellent manager.
5. Penelope Fitzgerald ...in a new production of Oliver in London's West End.
6. I'm quite happy for your children to come to the party because I know they ... very well-behaved.
7. The snake in this picture.... the forces of evil.
8. They don't really like living here. They.... of moving.
9. ... you...that man over there with the grey suit on? He's my brother.

10. I'm really looking forward to this holiday. The hotel ... lovely in the photographs.
11. I can't come out tonight because I ... Paul.
12. I'll do it if I can, but I ... not ... much time today.
13. What ... you ... of the management's new proposals?
14. 'What are you doing in here?' 'I ... just ... this painting. I think it's really beautiful.'
15. 'Where's the baby?' 'They ... her. Look, there she is on the scales.'
16. I haven't spoken to him much but he ... to be a very nice man.
17. Look at Nick out in the garden. He ...really nice with the younger children.
18. So Peter's still not here. I ... he's forgotten about the meeting. We should start without him.

The perfect aspect

The use of the perfect aspect indicates that the event took place before the time being referred to *or* that it covered a period of time up to the time being referred to. It also shows that this event has some relevance to the time being referred to:

John's *left*. (Present perfect). John left before the present time. He is not here now.

John *had left* when we got there, (past perfect). John left before we got there. He was not there when we got there. John *will have left* when we get there, (future perfect). John will leave before we get there. He will not be there when we get there.

The infinitive can also have a perfect aspect: He is sure *to be* there, (infinitive with 'to'). He is sure *to have been* there, (perfect infinitive with 'to') (= It is certain that he has been/was there).

Modals can be followed by the infinitive or the perfect infinitive: Pam may *tell* him the news, (infinitive). Pam may *have told* him the news, (perfect infinitive) (= It is possible that Pam has told him the news).

Exercise 1. Put the verbs in brackets into the present perfect simple, the past perfect simple or the future perfect simple.

1. The local car factory *has suffered* (suffer) a big drop in sales this year.
2. I ... (work) here for too long. It's time to find a new job.
3. By the time I see my mother tonight, she ... (hear) the news.
4. I was nineteen and studying at university. I ... (be) there for almost a year.
5. It was New Year's Eve but none of the family really wanted to celebrate. They ... (have) a terrible year.
6. They ... (be married) for twenty-five years next month.

7. The doctor came as quickly as she could but the old man ... (already die).
8. She woke up and thought about the night before. It ... (certainly be) a night to remember.
9. Oh no! You look terrible. What... (happen)?
10. When the ship comes back to port next week, the crew ... (be) at sea for six months.
11. Go and help that child. She ... (fall off) her bike.
12. No one in the village had any money because they ... (all lost) their jobs.
13. By the time the summer comes. I ... (finish) all my exams.
14. There was no one at the meeting. Everyone ... (decide) to boycott it.
15. I hear you're looking for a new job. ... (you/find) one?

Read and translate the text.

Hot weather

Weather is hottest in places near the equator because they are nearer the sun. Weather here can be hot and dry, or hot and wet. The highest temperature recorded was in Libya in 1922. It was 58 degrees (136 degrees Fahrenheit) centigrade!

Hot deserts, what are they? Places with less than 25 centimeters (9.8 inches) of rain every year are called deserts. Deserts can be hot or cold, but they are almost always dry because the winds there blow from the land to the ocean. During the day, the skies are usually clear and sunny, but with no clouds to keep the heat in, the nights can be very cold!

The driest place in the world is the Atacama Desert in Chile. It once had no rain for 400 years!

Droughts and fires, what are they? If rain doesn't fall for a long time, rivers and lakes can dry up. When this happens it's called a drought. Crops can't grow without water, so if there's a long drought, people don't have enough to eat and there can be a famine. Hot sun can start fires. Fires can be a big problem in hot, dry countries because trees and other plants are dry. Forest fires are not always bad because they clear up dead leaves and help the soil. Some plants need strong heat for their seeds to grow!

Sandstorms: when storm clouds form after a hot day in the desert, sandstorms can happen. Most sandstorms are not dangerous and they are only a few meters high, but sometimes strong winds blow the sand up to 3 kilometers (1.9 miles) in the air and carry it for thousands of kilometers. Big sandstorms can break rocks and they can last for three or more days! It's difficult to see and breathe in a sandstorm.

Humid weather, when does it happen? Hot places are not always dry. Hot places near water are often humid because air sucks up the water that evaporates from oceans and rivers. The amount of water vapor in the air is called its humidity.

In hot, humid weather your sweat can't evaporate, so you can't cool down. You must drink lots of water in hot weather. If your body gets too hot you can get heatstroke and be sick.

On a clear, humid day you can sometimes see the water vapor in the air – this is called a heat haze.

Vocabulary.

Temperature – how hot or cold something is (температура).

Famine – when there isn't enough food for a long time (голод).

Clear up – to make clean (убрать).

Dead – not living any more (мертвый).

Leaves – the flat green part of a plant (листья).

Storm – very bad weather (шторм).

Dangerous – can damage something or someone (опасный).

Rock – a very hard, natural material (скала).

Breathe – to take in and let and let out air through your nose and mouth (дышать).

Humid – warm and wet (влажный).

Suck up – to lift something up into the air (поглощать).

Evaporate – to change from liquid into gas (for example when water changes into steam) (испаряться).

Sweat – water that comes out of our bodies when we get very hot (пот).

Cool down – to become cooler (охлаждать).

Exercise 1. Correct the sentences.

1. Weather is coldest in places near the equator.
2. Places with more than 25 centimeters of rain are called deserts.
3. Winds in the deserts blow from the ocean to the land.
4. Nights in the desert can be very hot.
5. The Atacama Desert once had no sun for 400 years.

Exercise 2. Say if the statements are true or false.

1. There is no water. T/F.
2. Rivers and lakes dry up. T/F.
3. There is heavy rain. T/F.
4. Trees become dry. T/F.
5. There is lots of food. T/F.
6. Crops can't grow. T/F.

Exercise 3. Translate the following words.

1. Desert
2. Sweat

3. Sun
4. Humid
5. Hot
6. Famine
7. Sandstorm
8. Drought
9. Fire
10. Dry

Exercise 4. Answer the questions.

1. What can happen after a hot day in the desert?
2. How high are sandstorms?
3. How long can sandstorms last?
4. What do we call the amount of water vapor in the air?
5. Why can't people cool down in hot weather?

The Present Tense

Present Simple and Present Continuous

Present simple

Form: I work, etc.

Do/Does + infinitive for questions, negatives and short answers

Use: A regular repeated activity.

We often use the present simple in this way with adverbs or adverbial phrases of frequency: *sometimes, never, occasionally, every day, on Saturdays, once a week*, etc: I *catch* the 8 o'clock train every day. He *attends* the board meeting every Monday.

Something that is generally true; a statement of fact: Water *boils* at 100 degrees centigrade. Cats *don't like* water. Where *do* you *work*?

With stative verbs, that is, verbs that describe sentiments, thoughts and states rather than activities: Adrian *needs* your help. That coat *belongs* to me.

Instructions: (We can use the imperative or the present simple for instructions). You *take* the first turning on the left. You *mix* the soup with some cream at the end.

In clauses of time and condition, referring to the future. It is used after: when, if, unless, before, after, until, as soon as, whenever, etc: I'll give her the message *when* she *comes* back. Will you tell me if you *see* her?

Introducing a quotation: This book says that too much butter and milk is bad for you. The local newspaper *says* that the government should do more to create jobs in the area.

In newspaper headlines: Riots *break out* in city center. President *receives* huge welcome.

For dramatic narrative. It is most often used for dramatic narrative in sports commentating when radio and television commentators describe a short action that is completed as the commentator is speaking: And Eastwood *passes* the ball to Andrews. And Miller *takes* the lead in the first lap.

To give information about a future event: It is used in this way with information about timetables, official events and itineraries: The train *leaves* at 3.30 this afternoon. The Prime Minister *starts* his official visit to China tomorrow. You *arrive* at the hotel at about 6.00 and *have* your evening meal at 7.30.

Present continuous

Form:

Verb *to be* + present participle:

I am working, etc.

Use: Activity in progress at this moment: Where's David? He's *doing* his homework.

An activity that is taking place in the present time period and will continue for a limited time. The activity may or may not be in progress at the moment of speaking.

The present continuous is often used in this way with these days, this week, today, this month, etc: 'And what's Linda *doing* these days?' She's *doing* a course in engineering' (Linda may not be studying engineering at this minute). The decorator's *painting* the children's bedrooms this week so they're *sleeping* in the living room (The decorators may not be painting at this moment and the children may not be sleeping).

A situation that is in the process of changing: Venice *is failing* into the sea. The number of cars on the road *is increasing* rapidly each year.

A future intention with a verb of motion: We're *driving* up to Scotland next week. He's *flying* back on Saturday.

Exercise 1. Put the verbs in brackets into the present simple or present continuous.

1. Debbie .. (work) as an administrator at the university. She...(organize) all the timetables and teaching schedules. She ... (work) very long hours at the moment because it's the start of the academic year but she...(go) on a short holiday at the end of the month.

2. Simon and Sylvia ... (stay) in a cottage in the Yorkshire Dales this month. The cottage... (belong) to a cousin of Sylvia's but the cousin is away: she... (cycle) around Norfolk for a few weeks. Simon and Sylvia often ... (use) the cottage when Sylvia's cousin is away. They really... (enjoy) being in the middle of the countryside.

3. The International School for Languages... (do) very well at the moment. About two hundred students ... (take) evening classes this term. Many of them...(need) to learn a new language to improve their job prospects but some of them...(learn) a new language purely for pleasure. The European languages ... (be) very popular but Japanese and Russian... (get) more popular too. The school ... (provide) good learning facilities and ... (organize) a range of study tours.

4. The world population... (still increase) rapidly. Many people in the world ... (already starve) and many more ... (suffer) from malnutrition. The population ... (grow) fastest in the poorest countries where people... (need) to have children to look after them in their old age and where many of their children(die) at a very young age.

Read and translate the text.

Windy weather

As Earth moves, air moves with it. Warm air rises and cool air takes its place. As air moves, the pressure changes. Air goes from the high pressure to the low pressure, and this makes wind.

What types of wind do you know? Winds get their names from the direction that they blow from. For example, a north wind blows from north to south. We can see which direction a wind is blowing from by looking at a weathervane.

Storm winds: storm winds are called hurricanes over the Atlantic Ocean, cyclones over the Indian Ocean, and typhoons over the Pacific Ocean.

A hurricane starts as a thunderstorm over the ocean. The warm, wet air rises quickly and as Earth moves, it makes the storm spin upward. The center of a hurricane is called the eye – here the weather is calm, but around it there is heavy rain, and winds of up to 350 kilometers (218 miles per hour) per hour. It's difficult to predict where hurricanes will go because they can change speed and direction very quickly. Hurricanes can last for a week!

Since 1978, every hurricane has had a name. The strongest hurricane ever recorded is Hurricane Wilma.

What are tornadoes? Tornadoes, or twisters, are the fastest winds on Earth. The storm clouds are a funnel shape, and they spin down from thunderclouds. When the tornado touches the ground, it starts to move like a vacuum cleaner, sucking up things from the ground. Tornadoes move quite slowly, at about 40 kilometers (25 miles per hour) per hour, but winds inside the funnel can have speeds of up to 800 kilometers (497 miles per hour) per hour! Tornadoes are much smaller than hurricanes and they usually only last a few minutes, but they are very strong!

In 1986 some children in China were sucked up by a tornado that destroyed their school. They were put down safely 20 kilometers (12.4 miles) away!

Measuring the wind: a British man called Francis Beaufort found a way to

record the strength of the wind. This is called the Beaufort scale: calm= 0 kph (0 miles per hour), light air=3 kph (1.9 miles per hour), light breeze=9 kph (5.6 miles per hour), gentle breeze=15 kph (9.3 miles per hour), moderate breeze=25 kph (15.5 miles per hour), fresh breeze=35 kph (21.8 miles per hour), strong breeze =45 kph (28 miles per hour), moderate gale=56 kph (34.5 miles per hour), fresh gale=68 kph (42.3 miles per hour), strong gale=81 kph (50.3 miles per hour), whole gale=94 kph (58.4 miles per hour), storm=110 kph (68.4 miles per hour), hurricane=118 kph (73.3 miles per hour).

There are different scales to measure stronger winds, like tornadoes and hurricane. There scales go from 1 to 5. Level 1 tornadoes can push cars off the road, and level 5 tornadoes can lift a house off the ground! Level 5 hurricanes can damage a lot of things, for example, they can pull up trees and destroy buildings. A really big hurricane can be as big as Australia!

Vocabulary.

Move - to go from one place to another (двигаться).

Rise - to go up (подниматься).

Low - not high (низкий).

Direction - the position something or someone moves toward (направление).

Hurricane - a very strong wind (ураган).

Spin - to turn around quickly (вращение).

Calm - not wild (for weather) (спокойно).

Predict - to say what will happen (прогнозировать).

Ground - the land that we stand on (земля).

Vacuum cleaner - a machine that picks up dust and dirt from floors (пылесос).

Suck up - to lift something up into the air.

Destroy - to damage something very badly (уничтожать).

Measure - to find out how big or small something is (измерять).

Damage - to make something bad or weak (причинять ущерб).

Exercise 1. Translate the following words.

1. North-west
2. North-east
3. East
4. South-east
5. South
6. South-west
7. West

Exercise 2. Translate the following words.

1. Calm

2. Light air
3. Light breeze
4. Gentle breeze
5. Moderate breeze
6. Fresh breeze
7. Strong breeze
8. Moderate gale
9. Storm
10. Strong gale
11. Whole gale
12. Fresh gale
13. Hurricane

Exercise 3. Write hurricane or tornado.

1. Starts as a thunderstorm _____.
2. Spins down from a thundercloud _____.
3. Is also called a twister _____.
4. Is also called a cyclone _____.
5. Can last for a week _____.
6. Only lasts a few minutes _____.
7. The fastest winds on Earth _____.
8. Has a center called an eye _____.
9. Is like a funnel _____.
10. Can change direction very quickly _____.

Exercise 4. Complete the sentences using the following words: buildings, ground, things, Australia, cars, house, damage, road.

1. Strong winds can _____ a lot of _____.
2. A level 1 tornado can push _____ off the _____.
3. A level 5 tornado can lift a _____ off the _____.
4. Level 5 hurricanes can destroy _____.
5. A big hurricane can be as big as _____.

Exercise 5. Write about storms in your country.

The Past Tense
Past Simple and Past Continuous
Past simple

Form: past simple form of verb: I *arrived*, etc. (regular)
 I *came*, etc. (irregular)

Negative and question form: *did* + infinitive Short answer: *did*

1. Use: Completed actions. To talk about events and actions in the past that are now finished. The past simple refers to the complete event. The time or approximate time that the event took place is stated or is understood from the context. It may be in the very recent past: Your mother *phoned* a few minutes ago. Who *opened* this window? Or it may be in the more distant past: I never *learnt* to swim as a child.

2. Past habit or regular event. To talk about a regular, repeated or habitual event: We *went out* for a meal every evening on holiday. He *got up* at 7 o'clock every morning to go to work. Or a past habit or situation of some duration: He *smoked* for most of his life. She *worked* there for twenty years.

3. Past situation at a point in time. With stative verbs, to talk about a situation that existed at a certain time in the past: In 1950, there *were* fewer than 50 million cars in use around the world. At the time, I *had* a poorly-paid job in the local shop.

Past continuous

Form: *was/were* + present participle: I *was studying*, etc.

Used in conjunction with the past simple to describe an action or event that started before the event in the past simple and was in progress when the event in the past simple occurred: They *were watching* a film when we *arrived*. She *was studying* law when the war *started*.

To describe an action, event or situation that was in progress at a specified time in the past: *In 1982 we were living* in a small flat in Bristol. *In May of last year, she was studying* hard for her final exams. *At 6 o'clock this morning, I was walking* along the beach.

Used with *while* to describe two actions that were in progress at the same time: *While I was driving* along this morning, I *was thinking* about what you'd said. He *was cooking* the dinner *while* she was talking to him.

With adverbials beginning with *all* e.g. *all night, all morning, all day yesterday*, to show that an action or event was in progress throughout this time: I *was watching* television *all evening* *Were you working all weekend?*

To describe the background and set the scene for a narrative in the past: The wind *was blowing* and the rain *was beating* down. John Snell *was standing* at the bus stop shivering. He *was trying* to imagine being at home sitting by a warm fire. Finally he *saw* the headlights of the bus approaching from the distance.

Contrast: past continuous versus past simple

The past simple describes a complete event in the past. The past continuous does not describe the complete event, it describes the event in progress, at some time between its beginning and its end.

Stative verbs, that is verbs that describe thoughts, sentiments and states, cannot normally be put into the continuous form.

Look at the difference between these sentences: *He was cooking the dinner when I arrived* (He started cooking the dinner before my arrival and the cooking was in progress at the time of my arrival). *He cooked the dinner when I arrived* (I arrived and then he cooked the dinner. Two complete events). *I was reading a book about astrology last night* (The reading of the book was in progress last night. The past continuous does not describe the complete event so we assume that the book was not finished last night). *I read a book about astrology last night.* (I read the whole book from beginning to end last night). *It was raining all night.* (The rain was in progress throughout the night. The use of the past continuous emphasizes the continuity and duration of the event). *It rained all night* (It rained from the beginning of the night to the end of the night. The rain is viewed as one single, complete event). *While I was making the dinner, the children were watching television* (Two activities are in progress at the same time). *While I made the dinner, the children watched television* (Two complete events that happened at the same time). *I was having a bath at 8 o'clock* (The bath started before 8 o'clock and was still in progress at 8 o'clock). *I had a bath at 8 o'clock* (This describes the complete event. It started at 8 o'clock).

Exercise 1. Put the verbs in brackets into the past simple or past continuous.

Here he... (be), Davey Stark, the big rock star. It...(be) the end of an exhausting two-hour concert. The fans ... (scream) and... (shout). They... (want) Davey, their hero. His face ... (pour) with sweat, his hair ... (drip) and his heart ... (thump) violently. But he...(love) these moments at the end of a concert. He always...(feel) powerful and in control. He ...(decide) to do one more song for the crowd: one of his most popular. When he ... (start) singing, the crowd ... (go) wild. By the end of the song, they ... (all/dance) and ... (clap) their hands. When Davey ... (leave) the stage, he ... (be) exhausted but exhilarated. But when he ... (get back) to the dressing room, he ... (open) the door and ... (see) that two men ... (wait) for him. They ... (lock) the door behind Davey. He ... (shout) for his bodyguard Bernard, but no-one ... (come). The two men ... (tie) his hands behind his back, ... (blindfold) and ... (gag) him. Davey ... (can hear) Bernard in the next room. Bernard ... (talk) to someone and he ... (say) terrible things about Davey. He ... (say) that Davey ... (deserve) it. ... (Deserve) what? What ... (he/mean)? What ... (go on)? Why ... (not someone tell) him what ... (happen)?

Read and translate the text.

In the future

Earth is getting warmer. The climate has become warmer and colder in the past, but scientists think that it's now getting warmer faster than ever before and that it will stay warmer in the future.

Why is the climate changing? Earth gets heat from the sun. Some heat escapes, but some is trapped by a blanket of gasses like carbon dioxide. This keeps Earth warm enough for us to live here. It's called the greenhouse effect. The problem now is that our vehicles, factories, and power stations have made a lot of carbon dioxide. So we're trapping too much heat, and Earth is getting too warm!

Weather in the future: more heat means that there will be more rain, stronger winds, and storms in some places, and more droughts and famines in others. It all means that the snow and ice on mountains and around the Poles will melt, so sea levels will rise. If all the glaciers in the world melt, sea levels rise more than 60 meters (65.6 yards), and places near the ocean will go underwater! Ocean ice also helps keep Earth cool. If it melts, Earth will get even warmer!

What can we do? It's probably too late to stop the climate changing, but we can help to slow it down. We must make less carbon dioxide to help to keep Earth cool. We can use our cars less – we can walk or ride a bicycle. We can also plant more trees. Trees use carbon dioxide to make food, so if there are more trees, there will be less carbon dioxide in the atmosphere.

Using energy from the weather: we need electricity, but we don't have to make it in power stations. Instead, we can make it from energy from the weather. Wind energy and solar energy are called green energy. Green energy makes less carbon dioxide.

To make electricity, we can use strong winds to turn windmills that power turbines. Lots of windmills together are called a wind farm. Wind farms are often on hills or out in the ocean because the winds are stronger there.

Solar panels can change light from the sun into electricity. This electricity can power small machines or heat homes. People use solar panels all around the world.

The sun can even power cars and boats! Solar – powered vehicles can be expensive, but they don't make carbon dioxide. People keep finding new ways to use our amazing weather! In 1996, Kenichi Horie from Japan crossed the Pacific Ocean in this solar – powered boat.

Vocabulary.

Heat - something that is hot; to make something hot (высокая температура).

Vehicle - something for transporting goods or people (средство передвижения).

Trap - to keep something in a place where it can't escape.

Famine - when there isn't enough food for a long time (голод).

Melt - to make something so hot that it changes into a liquid (плавиться).

Sea - level how high the water is in the sea or ocean (уровень).

Ocean - the salt water that covers most of Earth (океан).

Electricity - a type of energy (электричество).

Solar - from the sun (солнечный).

Exercise 1. Circle the correct words.

1. Earth's climate is getting warmer/colder.
2. Scientists think that it's getting warmer slower/faster than before.
3. The sun heats Earth/the moon.
4. Factories make too much air/gas called carbon dioxide.
5. Carbon dioxide traps the heat/ light.
6. It's bad/good to trap some heat.

Exercise 2. Complete the following sentences using the words: walk, levels, go, heat, less, power stations, energy, storms, droughts, bicycle, famines, warm, trees.

1. Why is the climate changing?

Factories and _____ make a lot of carbon dioxide. We are trapping too much _____ and Earth is getting too _____.

2. What will happen in the future?

There will be more _____. More places will have _____, and there could be _____. If sea _____ rise, some places could _____ underwater.

3. What can we do?

We can make _____ carbon dioxide. We can plant more _____. We can _____ or ride a _____. We can use green _____.

Exercise 3. Translate the following sentences.

1. The usual weather for a place is its climate.
2. Green energy makes less carbon dioxide.
3. Energy from the sun is called solar energy.
4. The season after winter and before summer is called spring.
5. When sun and rain happen at the same time you can get a rainbow.
6. Lots of windmills together are called wind farms.
7. A heavy snowstorm is called blizzard.
8. A thick, low cloud is called fog.
9. A lot of carbon dioxide is making Earth too warm.
10. Tornado is the fastest wind on Earth.

Exercise 4. Write about the weather where you live.

Future with "will"

This is also referred to as the future simple or simple future tense.

Form: *will ('ll)* + bare infinitive: I *will* (I'll) go, etc.

Short form of *will not*: *won't*

Use: To make a statement of fact or a prediction about the future: Sam *will be* here tomorrow. Tonight's program *will be* very interesting.

To make formal announcements of future plans and to present *weather forecasts*. It is therefore often used *in newspapers* and *on the television* and *radio*: The new President *will move* into the White House tomorrow. Rain *will continue* throughout the day.

To express *hopes*, expectations, thoughts about the future. Used *after verbs* like: *assume*, *believe*, doubt, expect, hope, *reckon*, suppose, *think* and be sure, afraid and with adverbs like *perhaps*, possibly, probably, definitely: I expect they'll be here soon. Do you think she'll bring her boyfriend?

In sentences containing *clauses of condition* or time: If I get that job, I'll go out and celebrate. I'll phone you when I get there.

To express an *intention* when the *decision is made* at the time of speaking:
A: There isn't any milk left.

B: Oh, isn't there? I'll get some in town. I'm going there later on.

To express *the idea of willingness*: I'll do it for you, I promise, (promise) Will you *open* the window, please? (request) I'll *look after* the children for you. (offer) He *won't come* with me. (refusal) Yes, I'll *come* with you. (agreement) I'll definitely *tell* him the truth this time, (determination) Stop that or I'll *call* the police, (threat)

To make offers or suggestions or to ask for suggestions, advice, instructions.
Use *Shall I/we ...* in the question form:

Shall I help you with that? (offer).

Shall we invite them round for dinner? (suggestion).

What *shall I do*?

Shall we come round after dinner?

Notes: the use of *shall*.

In spoken English, *shall* is most often used in the question form with *I* or *we* to make offers or suggestions or to ask for suggestions, advice, instructions: *Shall I* come with you? What *shall we* do tomorrow?

Shall is occasionally used to express strong determination about oneself or someone else: I *shall* go anyway. I don't care what you think. I *shan't* let him bully me? You *shall* have whatever you want.

Shall can be used in the same way as *will* in the first person but *will* is more common. In spoken English, the contraction 'll' is the most common.

Shall is used more frequently in formal written English than in informal written or spoken English: We *shall* make every effort to answer your enquiry as soon as possible. I *shall* be at the airport to meet you in person.

Short form of *shall not*: *shan't*.

Exercise 1. Complete the following sentences *will/'ll* or *shall/'ll* and a verb from the box.

offer	make	tell	have	buy	drop	wash	announce
receive	be sentenced	phone	carry	be	invite	go	

1. I'm sorry about losing that book. *I'll buy* you another one next week.
2. I...one of those cases for you.
3. The temperature...significantly during the afternoon.
4. ...you ...me when you get the news? You've got my number haven't you?
5. The Chancellor ... the details of the budget at 10 o'clock tomorrow.
6. ...we...her the truth about what happened?
7. I expect they ... here soon.
8. You...your exam result by post during the first few days of August.
9. I... not...them here again, whatever you say.
10. If he is found guilty, he...to life imprisonment.
11. I... never...the same mistake again.
12. ... we...for a swim this afternoon?
13. They definitely ... not ... me the job: I had a terrible interview.
14. ... I ... these plates?
15. I'm determined that he ... everything he wants.

Contrast: 'be going to' versus 'will'- intention

The *be going to* and *will* futures can *both* be used to express an intention about the future.

Be going to: the intention is *premeditated*. The decision was made before the time of speaking or writing and plans have probably already been made:

A: *You know it's Emily's birthday on Friday, don't you?*

B: *Yes, I'm going to buy her a present this afternoon.*

Will: the intention is *unpremeditated*. The decision is made at the time of speaking or writing:

A: *You know it's Emily's birthday on Friday, don't you?*

B: *Actually I'd forgotten. Thanks for reminding me. I'll buy her a present this afternoon.*

Prediction

The *be going to* and *will* futures can both be used to make predictions about the future.

be going to: the prediction is based on some form of *evidence* that exist in the present. It is often used to predict what is about to happen but it can be used to predict something that is not in the immediate future: Oh look! That car *is going to crash*. That child eats too much. *He's going to be* really overweight one day.

Will: to express beliefs, *hopes, thoughts, assumptions* and doubts about the future: It'll *be* a difficult year for the new Prime Minister. I'm sure you'll *enjoy* yourself there.

Statement of future fact

'The be going to' and 'will' futures can both be used to make statements about the future but the emphasis is slightly different:

- 1) The number of students will fall over me next five years.
- 2) The number of students is going to fall over the next five years.

Sentence 1 is a statement of the future fact, or of the speaker's beliefs.

Sentence 2 is also a statement of future fact but it emphasizes that the speaker is thinking of present trends. It makes the speaker seem more involved and is thus more informal.

Expression of willingness

'Will' is often used to express willingness.

'Be going to' does, not have this meaning: I'll help you as much as I can (expression of willingness: a promise). I'm going to help you as much as I can (expression of intent). Summary:

- 1) 'Be going to' always indicates a link with the present.
 - a) present intention/plans/preparations,
 - b) present evidence of a future event.
- 2) When we use 'will', the emphasis is more on the future than on its link with the present.
- 3) 'Will' is more formal than be going to and is therefore used more extensively in written English.

Exercise 1. Put the verbs into the 'be going to'- future or the 'shall/will'- future. If both tenses are possible, choose the one that is most appropriate for the context. With the verbs 'to go' or 'to come' use the present continuous as future instead of the 'be going to'- future.

Two friends, Jack and David, are talking.

J: Have you decided what you ... (do) this weekend?

D: Yes, we... (have) a quiet day on Saturday and then on Sunday we ... (take) a bus into the mountains and do some walking. And we ... (probably book into) a hotel there for the night. What about you? ... (you/do) lots of work as usual?

J: Well, no. Mark phoned last night about coming down this weekend.

D: Really?

J: Yes, he ... (come) on Friday.

D: Oh, I'd like to see him. I think ... (phone him up) tonight and arrange something.

J: Well, we're planning to spend the day on the beach on Saturday. We ... (do) some swimming and sunbathing. I just hope the weather ... (be) warm enough. And then on Saturday night we ... (see) that new film with Tom Cruise.

D: Well, as I've got nothing planned, I... (join) you at the beach on Saturday then, if that's O.K.

J: Of course it is. I ... (pick you up) from your flat some time after breakfasts.

D: Oh thanks ... (I/bring) a picnic?

J: Yes. Why not? I tell you what: Mark and I ... (make) some sandwiches and... (you/bring) some salad and fruit?

D: Yes, fine. I... (do) that. Good. That... (save) us all the cost of eating out. And what about the film? What time... (you/see) that?

J: We ... (see) the early showing at 6.00 and then we... (try out) that new disco in town.

D: Right. Well, I think I ... (spend) the evening at home with Sarah.

J: O.K. So I ... (see) you on Saturday morning, probably at around 10 o'clock.

D: Fine.

Part II

Read and translate the text.

Natural disasters

A natural disaster is a major adverse event resulting from natural processes of the Earth; examples include floods, hurricanes, tornadoes, volcanic eruptions, earthquakes, tsunamis, and other geologic processes. A natural disaster can cause loss of life or property damage, and typically leaves some economic damage in its wake, the severity of which depends on the affected population's resilience, or ability to recover and also on the infrastructure available.

An adverse event will not rise to the level of a disaster if it occurs in an area without vulnerable population. In a vulnerable area, however, such as Nepal during the 2015 earthquake, an earthquake can have disastrous consequences and leave lasting damage, requiring years to repair.

Nature challenges humans in many ways, through disease, weather and famine. For those living along the coast, one usual phenomenon capable of catastrophic destructions is the tsunami (pronounced "tsoo-NAH-mee"). A tsunami is a series of waves generated in a body of water by an impulsive disturbance.

Earthquakes, landslides, volcanic eruptions, explosions, and even the impact of meteorites can generate tsunamis. Starting at sea, a tsunami slowly approaches land, growing in height and losing energy through bottom friction and turbulence. Still, just like any other water waves, tsunamis unleash tremendous energy as they plunge onto the shore. They have great erosion potential, stripping beaches of sand, undermining trees, and flooding hundreds of meters inland. They can easily crush cars, homes, vegetation, and anything they collide with. To minimize the devastation of tsunamis, scientists are constantly trying to anticipate them more accurately and more quickly. Because many factors come together to produce a life-threatening tsunami, foreseeing them is not easy. Despite this, researchers in meteorology persevere in studying and predicting tsunami behavior.

Vocabulary.

Adverse- having a negative or harmful effect on something (неблагоприятный).

Resilient- able to quickly return to a previous good condition (выносливый).

To anticipate –to expect, to sense something before it happens (ожидать).

Catastrophic –extremely harmful, causing financial or physical ruin (катастрофический).

Collide –to come together with great or violent force (сталкиваться).

Eruption- a sudden, often violent outburst (извержение).

Famine- severe hunger, a drastic food shortage (голод).

Flood- an overflowing of water, an excessive amount (наводнение).

Impact- a strong influence (удар, воздействие).

Persevere- to keep going, despite obstacles or discouragement, to maintain a purpose (проявлять упорство).

Plunge- to go down suddenly, to decrease by a great amount in a short time (погружаться).

Unleash- to release a thing or an emotion (спускать, давать волю).

Exercise 1. Find the word or phrase of opposite meaning.

1. Persevere	a. To pass by without hitting
2. Anticipate	b. To give up
3. Famine	c. To not see something coming
4. Collide	d. Harmless
5. Catastrophic	e. Excess of food

Exercise 2. Find the word that best completes each sentence.

1. Residents of Hawaii accept the possibility of a volcanic (eruption/perseverance).

2. Years after the accident, she was finally able to (anticipate/unleash) her feelings of anger.
3. Houses along the river often face (famine/flooding) during the rainy season.
4. Many people think it is cruel to (collide/plunge) live lobsters into boiling water.
5. A well-written essay should make some kind of (catastrophe/impact) on its readers.

Read and translate the text.

Geological disasters

Let us examine avalanches and landslides. During World War I, an estimated 40,000 to 80,000 soldiers died as a result of avalanches during the mountain campaign in the Alps at the Austrian-Italian front. Many of the avalanches were caused by artillery fire.

What are earthquakes? An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves. At the Earth's surface, earthquakes manifest themselves by vibration, shaking and sometimes displacement of the ground. Earthquakes are caused by slippage within geological faults. The underground point of origin of the earthquake is called the *seismic focus*. The point directly above the focus on the surface is called the *epicenter*. Earthquakes by themselves rarely kill people or wildlife. It is usually the secondary events that they trigger, such as building collapse, fires, tsunamis (seismic sea waves) and volcanoes, which are actually the human disaster. Many of these could possibly be avoided by better construction, safety systems, early warning and planning.

Let us learn the meaning of sinkholes. When natural erosion or human mining makes the ground too weak to support the structures built on it, the ground can collapse and produce a sinkhole. For example, the 2010 Guatemala City sinkhole which killed fifteen people was caused when heavy rain from Tropical Storm Agatha, diverted by leaking pipes into a pumice bedrock, led to the sudden collapse of the ground beneath a factory building.

Volcanic eruptions, what are they? Volcanoes can cause widespread destruction and consequent disaster in several ways. The effects include the volcanic eruption itself that may cause harm following the explosion of the volcano or the fall of rock. Second, lava may be produced during the eruption of a volcano. As it leaves the volcano, the lava destroys many buildings, plants and animals due to its extreme heat. Third, volcanic ash generally meaning the cooled ash - may form a cloud, and settle thickly in nearby locations. When mixed with water this forms a concrete-like material. In sufficient quantity ash may cause roofs to collapse under its weight but even small quantities will harm humans if inhaled.

Since the ash has the consistency of ground glass it causes abrasion damage to moving parts such as engines. The main killer of humans in the immediate surroundings of a volcanic eruption is the pyroclastic flows, which consist of a cloud of hot volcanic ash which builds up in the air above the volcano and rushes down the slopes when the eruption no longer supports the lifting of the gases. It is believed that Pompeii was destroyed by a pyroclastic flow. A lahar is a volcanic mudflow or landslide. The 1953 Tangiwai disaster was caused by a lahar, as was the 1985 Armero tragedy in which the town of Armero was buried and an estimated 23,000 people were killed.

Java is an island of Indonesia. Jakarta is located on western Java. Much of Indonesian history took place on Java. It was the center of powerful Hindu-Buddhist empires, the Islamic sultanates, and the core of the colonial Dutch East Indies. Java was also the center of the Indonesian struggle for independence during the 1930s and 1940 years. Java dominates Indonesia politically, economically and culturally. Formed mostly as the result of volcanic eruptions, Java is the 13th largest island in the world and the fifth largest in Indonesia. A chain of volcanic mountains forms an east–west spine along the island.

A specific type of volcano is the super volcano. According to the Toba catastrophe theory, 75,000 to 80,000 years ago a super volcanic event at Lake Toba reduced the human population to 10,000 or even 1,000 breeding pairs, creating a bottleneck in human evolution. It also killed three-quarters of all plant life in the northern hemisphere. The main danger from a super volcano is the immense cloud of ash, which has a disastrous global effect on climate and temperature for many years.

Vocabulary.

Avalanches –a large amount of ice, snow and rock falling quickly down the side of a mountain (лавина).

Landslides –a mass of rock and earth moving suddenly and quickly down a steep slope (оползень).

Earthquake – a sudden violent movement of the Earth’s surface, sometimes causing great damage (землетрясение).

Sinkhole –a cavity in the ground, especially in the limestone formation, caused by water erosion and providing a route for surface water to disappear underground.

Divert- to cause someone or something to change direction (отклонять).

Pumice (stone)- a type of grey light stone which is used in pieces or as a powder for rubbing things to make them smooth (пемза).

Concrete- a very hard building material made by mixing together CEMENT, sand, small stones and water (бетон).

Inhale-to breathe air, smoke, or gas into your lungs (вдыхать).

Exercise 1. Answer the questions.

1. What are avalanches?
2. What are earthquakes?
3. What are sinkholes?
4. How serious are volcanic eruptions?
5. What is the reason of earthquakes?
6. What are the pyroclastic flows?
7. What is lahar?
8. What is the main danger from a super volcano?
9. What island is formed mostly as the result of volcanic eruptions?

Exercise 2. Decide if the following statements are true or false.

1. An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves. T/F.
2. Earthquakes are caused by slippage within geological faults. T/F.
3. A lahar is a volcanic mudflow or landslide. T/F.
4. Jakarta is located on western Java. T/F.
5. The main danger from a super volcano is the immense cloud of ash, which has a disastrous global effect on climate and temperature for many years. T/F.

Read and translate the text.

Hydrological disasters

It is a violent, sudden and destructive change either in quality of earth's water or in distribution or movement of water on land below the surface or in atmosphere.

Floods, what are they? A flood is an overflow of water that 'submerges' land. The EU Floods Directive defines a flood as a temporary covering by water of land which is usually not covered by water. In the sense of 'flowing water', the word may also be applied to the inflow of the tides. Flooding may result from the volume of water within a body of water, such as a river or lake, which overflows causing the result that some of the water escapes its usual boundaries. While the size of a lake or other body of water will vary with seasonal changes in precipitation and snow melt, it is not a significant flood unless the water covers land used by man like a village, city or other inhabited area, roads, expanses of farmland, etc.

Limnic eruptions: a limnic eruption occurs when a gas, usually CO₂, suddenly erupts from deep lake water, posing the threat of suffocating wildlife, livestock and humans. Such an eruption may also cause tsunamis in the lake as the rising gas displaces water. Scientists believe landslides, volcanic activity, or explosions can trigger such an eruption. To date, only two limnic eruptions have been observed and recorded. In 1984, in Cameroon, a limnic eruption in Lake Monoun caused the

deaths of 37 nearby residents, and at nearby Lake Nyosin 1986 a much larger eruption killed between 1,700 and 1,800 people by asphyxiation. Tsunami: a tsunami (plural: tsunamis or tsunamis; from Japanese: 津波, lit. "harbor wave"), also known as a seismic sea wave or as a tidal wave, is a series of waves in a water body caused by the displacement of a large volume of water, generally in an ocean or a large lake. Tsunamis can be caused by undersea earthquakes such as the 2004 Boxing Day tsunami, or by landslides such as the one in 1958 at Lituya Bay, Alaska, or by volcanic eruptions such as the ancient eruption of Santorini. On March 11, 2011, a tsunami occurred near Fukushima, Japan and spread through the Pacific.

Vocabulary.

Flood – a large amount of water covering an area that is usually dry (наводнение).

To overflow – if a container or a place overflows, whatever is inside it starts coming out because it is too full (переливаться, выходить из берегов).

Precipitation – water which falls from the clouds towards the ground, especially as rain or snow (осадки).

Eruption – when a volcano erupts, it explodes and flames and rocks come out of it (извержение вулкана).

Asphyxiate – to cause someone to be unable to breathe, usually resulting in death (вызвать удушье, душить).

Tsunami – an extremely large wave caused by movement of the Earth under the sea, often caused by an earthquake (when the Earth shakes).

Landslide- a mass of rock and earth moving suddenly and quickly down a steep slope (оползень).

Exercise 1. Answer the questions.

1. What are hydrological disasters?
2. What are floods?
3. What is the reason of flooding?
4. When does a limnic eruption occur?
5. What is tsunami?
6. What causes tsunamis?

Exercise 2. Say if the statements are true or false.

1. A flood is an overflow of water that 'submerges' land. T/F.
2. Tsunamis can be caused by undersea earthquakes. T/F.
3. Tsunami is literally "harbor wave". T/F.
4. A limnic eruption occurs when a gas suddenly erupts. T/F.

Read and translate the text.

Meteorological disasters

Blizzards: blizzards are severe winter storms characterized by heavy snow and strong winds. When high winds stir up snow that has already fallen, it is known as a ground blizzard. Blizzards can impact local economic activities, especially in regions where snowfall is rare. The Great Blizzard of 1888 affected the United States, when many tons of wheat crops were destroyed, and in Asia, 2008 Afghanistan blizzard and the 1972 Iran blizzard were also significant events.

Cyclonic storms: cyclone, tropical cyclone, hurricane, and typhoon are different names for the same phenomenon, which is a cyclonic storm system that forms over the oceans. The determining factor on which term is used is based on where they originate. In the Atlantic and Northeast Pacific, the term "hurricane" is used; in the Northwest Pacific it is referred to as a "typhoon" and "cyclones" occur in the South Pacific and Indian Ocean.

The deadliest hurricane ever was the 1970 Bhola cyclone; the deadliest Atlantic hurricane was the Great Hurricane of 1780 which devastated Martinique, St. Eustatius and Barbados. Another notable hurricane is Hurricane Katrina, which devastated the Gulf Coast of the United States in 2005.

Droughts: drought is the unusual dryness of soil, resulting in crop failure and shortage of water and for other uses which is caused by significant low rainfall than average over a prolonged period. Hot dry winds, shortage of water, high temperatures and consequent evaporation of moisture from the ground can contribute to conditions of drought.

Well-known historical droughts include the 1997–2009 Millennium Drought in Australia led to a water supply crisis across much of the country. As a result, many desalination plants were built for the first time. In 2011, the State of Texas lived under a drought emergency declaration for the entire calendar year and severe economic losses. The drought caused the Bastrop fires.

Thunder storms: severe storms, dust clouds and volcanic eruptions can generate lightning. Apart from the damage typically associated with storms, such as winds, hail and flooding, the lightning itself can damage buildings, ignite fires and kill by direct contact. Especially deadly lightning incidents include a 2007 strike in Ushari Dara, a remote mountain village in northwestern Pakistan, that killed 30 people, the crash of LANSA Flight 508 which killed 91, and a fuel explosion in Dronka, Egypt caused by lightning in 1994 which killed 469. Most lightning deaths occur in the poor countries of America and Asia, where lightning is common and adobe mud brick housing provides little protection.

Hailstorms: hailstorms are falls of rain drops that arrive as ice, rather than melting before they hit the ground. A particularly damaging hailstorm hit Munich, Germany, on July 12, 1984, causing about 2 billion dollars in insurance claims.

Heat waves: a heat wave is a period of unusually and excessively hot weather. The worst heat wave in recent history was the European Heat Wave of 2003. A summer heat wave in Victoria, Australia, created conditions which fuelled the massive bushfires in 2009. Melbourne experienced three days in a row of temperatures exceeding 40 °C (104 °F) with some regional areas sweltering through much higher temperatures. The bushfires, collectively known as "Black Saturday", were partly the act of arsonists. The 2010 Northern Hemisphere summer resulted in severe heat waves, which killed over 2,000 people. It resulted in hundreds of wildfires which causing widespread air pollution, and burned thousands of square miles of forest.

Tornadoes: a tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. It is also referred to as a *twister* or a *cyclone*, although the word cyclone is used in meteorology in a wider sense, to refer to any closed low pressure circulation. Tornadoes come in many shapes and sizes, but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust. Most tornadoes have wind speeds less than 110 miles per hour (177 km/h), are approximately 250 feet (80 m) across, and travel a few miles (several kilometers) before dissipating. The most extreme tornadoes can attain wind speeds of more than 300 mph (480 km/h), stretch more than two miles (3 km) across, and stay on the ground for dozens of miles (perhaps more than 100 km).

Wildfires: wildfires are large fires which often start in wild land areas. Common causes include lightning and drought but wildfires may also be started by human negligence or arson. They can spread to populated areas and can thus be a threat to humans and property, as well as wildlife. Notable cases of wildfires were the 1871 Peshtigo Fire in the United States, which killed at least 1700 people, and the 2009 Victorian bushfires in Australia.

Vocabulary.

Blizzard – a severe snow storm with strong winds (буран, вьюга).

Stir up – to cause a substance such as soil or dust to move and rise up (шелохнуться, пробуждать).

Snowfall – the amount of snow that falls in a particular area during a particular period, or a fall of snow (снегопад).

Hurricane – a violent wind which has a circular movement, especially found in the West Atlantic Ocean (ураган).

Drought – a long period when there is little or no rain (засуха).

Soil – the material on the surface of the ground in which plants grow (почва).

Desalination – the removal of salt from sea water (опреснение воды).

Dust – dry dirt in the form of powder that covers surfaces inside a building, or very small dry pieces of soil, sand or other substances (пыль).

Adobe – a mixture of earth and straw made into bricks and dried in the sun, used to build houses in some parts of the world (кирпич-сырец).

Negligence – when you do not give enough care or attention to someone or something (небрежность).

Exercise 1. Answer the questions.

1. What are blizzards?
2. What are the other names of cyclonic storms?
3. What is a drought?
4. What is a thunder storm?
5. What are hailstorms?
6. What is a heat wave?
7. What is a tornado?
8. Where do wildfires often start?

Exercise 2. Decide if the statements are true or false.

1. Blizzards are severe winter storms. T/F.
2. Blizzards can impact local economic activities. T/F.
3. A cyclonic storm system often forms over the oceans. T/F.
4. Drought is the unusual dryness of soil. T/F.
5. Storms, dust clouds and volcanic eruptions can generate lightning. T/F.
6. Hailstorms are falls of rain drops that arrive as ice. T/F.
7. A heat wave is a period of unusually and excessively hot weather. T/F.
8. A tornado is a violent, dangerous, rotating column of air. T/F.
9. Tornadoes come in one shape and size. T/F.
10. Wildfires are large fires which often start in wild land areas. T/F.

Read and translate the text.

Air quality in Almaty

Many local residents complain about the bad air quality in Almaty. The problem is the location of the city. Set at the foothills of the Tianshan Mountains, Almaty is surrounded by a large mountain range (which is labeled the lungs of Almaty) to the South and factories to the North and West of the city creating a bowl where polluted air is trapped. This effect is quite visible from the mountains. From the Shymbulak gondola you should be able to see the city in the distance, but as the pictures show it is only a smoggy backdrop to the clean mountain air. Fine particles are also a problem in Almaty, which is quite noticeable when walking around town, and can frequently lead to eye irritations.

In 2011 the GEF started a sustainable transport in the city of Almaty project, with the objective to reduce the growth of transport-related greenhouse gas (GHG)

emissions in the City of Almaty, while simultaneously improving urban environmental conditions. Children and newborns are more sensitive to the health effects of air pollution since they take in more air than adults for their body weight and consequently, a higher level of pollutants. Many families (young and old) in Almaty complain of asthma and allergies caused by the polluted air. Much to the upset of environmental groups, a plan is being developed to construct a new ski resort in another part of the unspoiled mountainous areas of Almaty. The NGO- Green Salvation is powering a petition against the plans to develop Kok-Zhailyau National Park. On 17 March dozens of people went to protest against the construction project by writing "Kok-Zhailyau SOS!" in the snow.

Eco taxi was founded on the simple belief that taking care of our customers and taking care of the environment go hand in hand. That's why we're committed to an all-hybrid taxi fleet. In fact, we want all Toronto taxis to be hybrid and we challenge other taxi companies to go green as well. Our commitment to sustainable urban transportation does not stop at green taxis. We understand that taxis are part of the larger urban transportation network in which opportunities for environmental stewardship are vast. Eco taxi plans to be front and center in driving change for a greener Toronto. Even today we are looking ahead at the possibility of an all-electric fleet.

Vocabulary.

To complain – to say that something is wrong or not satisfactory (жаловаться).

Foothills – low mountains or low hills at the bottom of a larger mountain or range of mountains (предгорья).

Bowl – the rounded inside part of something (чаша, углубление).

Backdrop – the view behind something.

Simultaneously – happening or being done at exactly the same time (одновременно).

Pollution – damage caused to water, air, etc. by harmful substances or waste (загрязнение).

Hybrid – a vehicle with an engine that uses both PETROL and another type of energy, usually electricity (гибридный, смешанный).

Sustainable- causing little or no damage to the environment and therefore able to continue for a long time.

Stewardship- someone's stewardship of something is the way in which that person controls or organizes it (управление).

Fleet- a number of buses, aircrafts, etc. under the control of one person or organization (автопарк).

Exercise 1. Answer the questions.

1. What is the reason of the bad air quality in Almaty?

2. What kind of atmosphere can we view from the mountains and from the Shymbulak gondola?
3. What do you say about a project of a sustainable transport in the city of Almaty?
4. Who are more sensitive to the health effects of air pollution? Why?
5. What is an all-hybrid taxi fleet?
6. Have you ever taken an Eco taxi? How much did you pay for that trip?
7. What is GHG?

Exercise 2. Translate the following sentences using the key words from the vocabulary above.

1. The foothills of the Pyrenees are very picturesque.
 2. The mountains form a dramatic backdrop to the little village.
 3. There were several simultaneous explosions in different cities.
 4. The manifesto includes tough measures against environmental pollution.
- Read and translate the text.

The Aral Sea

The Aral Sea is situated in Central Asia, between the Southern part of Kazakhstan and Northern Uzbekistan. Up until the third quarter of the 20th century it was the world's fourth largest saline lake, and contained 10grams of salt per liter. The two rivers that feed it are the Amu Darya and Syr Darya rivers, respectively reaching the Sea through the South and the North. The Soviet government decided in the 1960 years to divert those rivers so that they could irrigate the desert region surrounding the Sea in order to favor agriculture rather than supply the Aral Sea basin. The reason why we decided to explore the implications up to today of this human alteration of the environment is precisely that certain characteristics of the region, from its geography to its population growth, account for dramatic consequences since the canals have been dug. Those consequences range from unexpected climate feedbacks to public health issues, affecting the lives of millions of people in and out of the region.

By establishing a program to promote agriculture and especially that of cotton, Soviet government led by Khrouchtchev in the 1950 years deliberately deprived the Aral Sea of its two main sources of water income, which almost immediately led to less water arriving to the sea. Not only was all this water being diverted into canals at the expense of the Aral Sea supply, but the majority of it was being soaked up by the desert and blatantly wasted (between 25% and 75% of it, depending on the time period). The water level in the Aral Sea started drastically decreasing from the 1960 years onward. In normal conditions, the Aral Sea gets approximately one fifth of its water supply through rainfall, while the rest is delivered to it by the Amu Darya and Syr Darya rivers. Evaporation causes the

water level to decrease by the same amount that flows into the Sea, making it sustainable as long as inflow is equal to evaporation on average. Therefore the diversion of rivers is at the origin of the imbalance that caused the sea to slowly desiccate over the last 4 decades.

Level of salinity rose from approximately 10 g/l to often more than 100 g/l in the remaining Southern Aral. Salinity of the rivers varies with place and time, as well as through the seasons. When going through the desert, rivers often collect some salt compounds residues in the ground that result in higher salinity, but may well be lowered again after going through irrigated lands. Dams also affect salinity, notably by reducing its variability with the seasons. Smaller lakes within the Aral Sea that have stopped being fed by river flows tend to have higher salinity due to evaporation, causing some or all fishes that either survived or had been reintroduced in the 1990 years to die. Even re-watering those lakes does not compensate for the increased salinity over the years. In 1998, water level was down by 20 m, with a total volume of 210 km³ compared to 1,060 km³ in 1960.

Most of the changes in climate and landscape in the Aral Sea basin that we are about to explore are at the least indirect products of Human induced changes. While we must remember at all times that society is responsible for the crisis that has unfolded in and around the Aral, the point we want to make is that most of the actual changes that have afflicted the Sea since the 1960 years are the result of our environment's reaction to the stresses society has imposed on it. Thus, the difficulty lies as much in understanding the way climate and other natural systems function as in being capable of weighing the potential consequences of our actions before we undertake them. Risk assessment combined with scientific understanding should undercut our actions more efficiently; adding an ethical dimension to the equation remains more than welcome in addition to those more accessible and quantifiable factors, but is too fragile to be the centerpiece on which our decisions rely before we commit to large scale actions which can often, as we are about to see, engender even larger responses from our environment.

Vocabulary.

Saline – containing or consisting of salt (соленый, соляной).

Divert – to cause someone or something to change direction; to use something for a different purpose; to take someone's attention away from something (отклонять, отвлекать, развлекать).

Basin –the area of land from which streams run into a river, lake or sea (бассейн).

Blatant –describes something bad that is very obvious or intentional (явный, вопиющий).

Drastic – (especially of actions) severe and sudden or having very noticeable effects (решительный, крутой).

Evaporate –to cause a liquid to change to a gas, especially by heating (испаряться).

Dam –a wall built across a river which stops the river’s flow and collects the water, especially to make a RESERVOIR (=an artificial lake) which provides water for an area (дамба, плотина, запруда).

Fragile – easily damaged, broken or harmed (ломкий, хрупкий).

Exercise 1. Answer the questions.

1. Where is the Aral Sea situated?
2. What are the dramatic consequences since the canals have been dug?
3. When did the water level in the Aral Sea start drastically decreasing?
4. What are the reasons of most of the changes in climate and landscape in the Aral Sea basin that we are about to explore?
5. What caused the sea to slowly desiccate over the last 4 decades?
6. In normal conditions, where does the Aral Sea get approximately one fifth of its water supply?
7. What are the names of rivers that deliver the rest of water to the Aral Sea?

Exercise 2. Translate the following sentences using the key words from the vocabulary above.

1. You should test the salinity of the water.
2. The whole episode was a blatant attempt to gain publicity.
3. Plants keep cool during the summer by evaporating water from their leaves.
4. Be careful with that vase- it’s very fragile.

Read and translate the text.

Ecological problems of the Caspian Sea

The pollution of the Caspian Sea, partially as a result of hydrocarbons production, is one of the most serious environmental problems facing Kazakhstan today, the minister of environmental protection, Nurlan Iskakov said on September 6th in Astana during the KazEnergy- 1st Eurasian Energy Forum entitled, the Oil and Gas Sector and Energy. He noted that important causes of pollution related to the oil and gas industry include the flaring of gas, abandoned oil wells, and production-related emergencies. Mr. Iskakov emphasized that "in some cases, the ministry should enact highly strict ecological requirements in order to achieve a balance in the use of natural resources and the preservation of the ecological system, and to take administrative or in some cases, legal actions to solve certain problems".

He added that in the first half of 2006, the Committee of Nature Protection and the MEP had carried out more than 449 inspections of subsoil users on their adherence to ecological legislation. As a result of the checks, 285 ecological violations were discovered, and 183 administrative penalties were imposed for a total amount of 94.6 million KZT. During the same time period of last year, 223 inspections were carried out, and 200 violations were subsequently found.

Iskakov also said that for the most serious violations, 10 severe fines were levied for a total amount of 246.6 million KZT, 13 enterprises were ordered to halt their operations, and 2 criminal cases were filed, according to Interfax-Kazakhstan.

Vocabulary.

Flare –burn brightly either for a short time or not regularly (сверкать, вспыхивать).

Abandon – to leave a place, thing or person forever (покидать, оставлять).

Abandoned- оставленный, покинутый

Well –a deep hole in the ground from which you can get water, oil or gas (колодец).

Emphasize –to show or state that something is very important or worth giving attention to (подчеркивать, делать упор на).

Subsoil –the layer of soil which is under the surface level (подпочва).

Adhere- to stick firmly (придерживаться мнения).

Violation- an action that breaks or acts against something, especially a law, agreement, principle or something that should be treated with respect (нарушение).

Penalty- a punishment, or the usual punishment, for doing something that is against law (наказание, штраф).

Exercise 1. Answer the questions.

1. What is the partial result of pollution of the Caspian Sea?
2. Who is the minister of environmental protection in Kazakhstan?
3. When was the 1st Eurasian Energy Forum in Kazakhstan?
4. What are important causes of pollution related to the oil and gas industry?
5. What actions should be taken in order to achieve a balance in the use of natural resources and the preservation of the ecological system, and to take administrative or in some cases, legal actions to solve certain problems?
6. When had the Committee of Nature Protection and the MEP carried out more than 449 inspections of subsoil users on their adherence to ecological legislation?

Exercise 2. Translate the following sentences using the key words from the vocabulary above.

1. There was a sudden flare when she threw the petrol onto the fire.
2. The flame above the oil well flared up into the dark sky.

3. They had to abandon their attempt to climb the mountain.
4. He emphasized that the people taking part in the research were volunteers.
5. A smooth, dry surface helps the tiles adhere to the wall.
6. The translator had obviously adhered very strictly to the original text.
7. It was clear that they had not acted in violation of the rules.
8. Loss of privacy is one of the penalties of success.

Read and translate the text.

Causes and effects of dust storms

As you know, dust storms have always been a feature of desert climates, but what we want to focus on today is the extent to which human activity is causing them. And it is this trend that I want to look at, because it has wide-ranging implications. So-what are these human activities? Well, there are two main types that affect the wind erosion process, and thus the frequency of dust storms. There are activities that break up naturally wind-resistant surfaces such as off-road vehicle use and construction and there are those that remove protective vegetation cover from soils, for example, mainly farming and drainage. In many cases the two effects occur simultaneously which adds to the problem.

Let's look at some real examples. Perhaps the best-known example of agricultural impact on desert dust is the creation of the USA's dust bowl in the 1930s. The dramatic rise in the number of dust storms during the latter part of that decade was the result of farmers mismanaging their land. In fact, choking dust storms became so commonplace that the decade became known as the 'Dirty Thirties'.

Researchers observed a similar, but more prolonged, increase in dustiness in West Africa between the 1960s and the 1980s when the frequency of the storms rose to 80 a year and the dust was so thick that visibility was reduced to 1,000 meters. This was a hazard to pilots and road users. In places like Arizona, the most dangerous dust clouds are those generated by dry thunderstorms. Here, this type of storm is so common that the problem inspired officials to develop an alert system to warn people of oncoming thunderstorms. When this dust is deposited it causes all sorts of problems for machine operators. It can penetrate the smallest nooks and crannies and play havoc with the way things operate because most of the dust is made up of quartz which is very hard.

Another example – the concentration of dust originating from the Sahara has risen steadily since the mid-1960s. This increase in wind erosion has coincided with a prolonged drought, which has gripped the Sahara's southern fringe. Drought is commonly associated with an increase in dust-raising activity but it's actually caused by low rainfall which results in vegetation dying off.

The Aral Sea was an endorheic lake lying between Kazakhstan in the north and Uzbekistan in the south. The name roughly translates as "Sea of Islands", referring to over 1,100 islands that once dotted its waters; in the Turkic languages *aral* means "island, archipelago". The Aral Sea drainage basin encompasses Uzbekistan and parts of Tajikistan, Turkmenistan, Kyrgyzstan, Kazakhstan, Afghanistan and Pakistan.

Formerly one of the four largest lakes in the world with an area of 68,000 km² (26,300 sq mi), the Aral Sea has been steadily shrinking since the 1960s after the rivers that fed it were diverted by Soviet irrigation projects. By 2007, it had declined to 10% of its original size, splitting into four lakes – the North Aral Sea, the eastern and western basins of the once far larger South Aral Sea, and one smaller lake between the North and South Aral Seas. By 2009, the southeastern lake had disappeared and the southwestern lake had retreated to a thin strip at the western edge of the former southern sea; in subsequent years, occasional water flows have led to the southeastern lake sometimes being replenished to a small degree. Satellite images taken by NASA in August 2014 revealed that for the first time in modern history the eastern basin of the Aral Sea had completely dried up. The eastern basin is now called the Aralkum Desert.

In an ongoing effort in Kazakhstan to save and replenish the North Aral Sea, a dam project was completed in 2005; in 2008, the water level in this lake had risen by 12 m (39 ft) compared to 2003. Salinity has dropped, and fish are again found in sufficient numbers for some fishing to be viable. The maximum depth of the North Aral Sea is 42 m (138 ft).

The shrinking of the Aral Sea has been called "one of the planet's worst environmental disasters". The region's once-prosperous fishing industry has been essentially destroyed, bringing unemployment and economic hardship. The Aral Sea region is also heavily polluted, with consequential serious public health problems.

One of the foremost examples of modern human-induced environmental degradation is the drying up of the Aral Sea in Central Asia. Its ecological demise dates from the 1950s when intensive irrigation began in the then Central Asian republics of the USSR. This produced a dramatic decline in the volume of water entering the sea from its two major tributaries. In 1960, the Aral Sea was the fourth-largest lake in the world, but since that time it has lost two-thirds of its volume, its surface area has halved and its water level has dropped by more than 216 meters. A knock-on effect of this ecological disaster has been the release of significant new sources of wind-blown material, as the water level has dropped.

And the problems don't stop there. The salinity of the lake has increased so that it is now virtually the same as sea water. This means that the material that is blown from the dry bed of the Aral Sea is highly saline. Scientists believe it is adversely affecting crops around the sea because salts are toxic to plants.

This shows that dust storms have numerous consequences beyond their effects on climate, both for the workings of environmental systems and for people living in dry lands.

Vocabulary.

Dust – dry dirt in the form of powder that covers surfaces inside a building, or very small dry pieces of soil, sand or other substances (пыль).

Implication – when you seem to suggest something without saying it directly; the effect that an action or decision will have on something else in the future (скрытый смысл, намек, значение).

Erosion – эрозия, разъедание.

Soil – the material on the surface of the ground in which plants grow (почва).

Drainage – the ability of soil to allow water to flow away (дренаж, осушение).

Bowl – the rounded inside part of something (чаша, углубление).

Thunderstorm – a storm with thunder and LIGHTNING and usually heavy rain (гроза).

Nook – a small space which is hidden or partly sheltered (уголок).

Fringe – the outer or less important part of an area, group or activity (край, кайма).

Saline – containing or consisting of salt (соленый, соляной).

Tributary – a river or stream that flows into a larger river or a lake (приток).

Exercise 1. Answer the questions.

1. What is a feature of desert climates?
2. So what are the two main types of human activities that affect the wind erosion process, and thus the frequency of dust storms?
3. What is the best-known example of agricultural impact on desert dust in the 1930 years?
4. What are the most dangerous dust clouds in places like Arizona?
5. What has been called as "one of the planet's worst environmental disasters"?
6. What are the consequences of that the material that is blown from the dry bed of the Aral Sea is highly saline?
7. What are the numerous consequences of dust storms?
8. What is one of the foremost examples of modern human-induced environmental degradation?

Exercise 2. Decide if the following statements are true or false.

1. Dust storms have always been a feature of desert climates. T/F.
2. Drought is not associated with an increase in dust-raising activity. T/F.
3. The shrinking of the Aral Sea is called "one of the worst disasters". T/F.

4. The Aral Sea region is not heavily polluted. T/F.
5. The salinity of the lake is now virtually the same as sea water. T/F.

Read and translate the text.

Oil deposit of Kazakhstan

Kazakhstan oil facts: Kazakhstan recently completed a new assessment of its oil reserves and estimated proven and probable oil reserves at approximately 29 billion barrels. Kazakhstan earlier assessment in the 1990 years estimated reserves at approximately 16 billion barrels. Kazakhstan is no longer a minor world oil exporter as it was during the late 1990 years. Kazakhstan is poised to become an even more significant player in world oil markets over the next decade. Kazakhstan produced approximately 1.22 million barrels per day (bbl/d) of oil in 2004 and consumed just 224,000 bbl/d, resulting in net exports of almost 1 million bbl/d. Kazakhstan government hopes to increase production levels to around 3.5 million bbl/d by 2015. This would include approximately 1 million bbl/d from Kashagan, 700,000 bbl/d from Tengiz, 600,000 bbl/d from Kurmangazy, and 500,000 bbl/d from Karachaganak. Other smaller fields would account for the balance. Kazakhstan oil exports are growing rapidly, with current infrastructure delivering it to world markets via Black Sea (via Russia), Persian Gulf (via swaps with Iran), as well as some additional traffic northward to Russia via pipeline and rail.

Kazakhstan oil features: between 1999 and 2004, Kazakhstan oil production grew by about 15 percent every year, resulting in nearly a doubling (roughly) of oil production. Most recently, the first six months of 2005 showed a slower, 10 percent production growth year-over-year. The slower rate of growth may be attributed to government restrictions on associated gas flaring or to new restrictions to production-sharing agreements (PSAs). Increased Kazakhstan oil production in recent years has been the result of an influx of foreign investment into Kazakhstan oil sector. Kazakhstan expects the majority of the growth will come from four enormous fields: Tengiz, Karachaganak, Kurmangazy and Kashagan. The majority of Kazakhstan oil is exported via pipeline through Russia and other neighboring countries. Connections to ports on Black Sea and Persian Gulf have allowed some Kazakhstan oil (or proxy oil from Iran) to be traded on the world market. Efforts are underway to expand Kazakhstan's oil export infrastructure (especially to the east) over the next decade as Kazakhstan oil production increases. Also, there is a proposal to build an export pipeline from Kazakhstan to Iran via Turkmenistan but the proposal has yet to gain support from Western investors. Kazakhstan has also taken a heightened interest in sending oil over Black Sea to the reversed Odessa-Brody pipeline.

Human consumption of fossil fuels is expected to fully deplete the Earth's crude oil reserves by the year 2060. As

underground reservoirs of oil continue to shrink, we have no choice but to find alternatives. One promising source, with much cleaner emissions, is called bio-diesel. Bio Petroleum Alternatives 19 diesel is often made from soybean oil, although it can be made from any vegetable oil that is not elementally different from soy. Bio-diesel can even be made from used cooking oils that homes or restaurants would otherwise dispose of. Bio-diesel can be used without constraint in any vehicle that runs on diesel — no modifications are needed. Presently, diesel engines can take up to 20 percent soy in their soy-diesel blend. As the need for bio-diesel increases and the technology improves, we may soon witness the extinction of the fossil-fueled vehicle. This is good news for the planet, as bio-diesel is a more stable source of energy than petroleum, and it reduces contamination of our air and water.

Vocabulary.

Assessment –when you judge or decide the amount, value, quality or importance of something.

Infrastructure –the basic systems and services, such as transport and power supplies, that a country or organization uses in order to work effectively.

Export pipeline – a very long large tube, often underground, through which liquid or gas can flow for long distances to another country for sale (экспортировать нефть или газ через нефтепровод).

Investor – a person who puts money into something in order to make a profit or get an advantage.

Reservoir –a large supply of something (водохранилище, резервуар).

Consumption – the amount used or eaten (потребление, поглощение).

Emission – when gas, heat, light, etc. is sent out (выделение, излучение, выбросы).

Contaminate –to make something less pure or make it poisonous (заражать, загрязнять).

Constraint-something that restricts thought or action (принуждение, ограничение).

Contamination- being made less clean by a germ or hazardous substance (загрязнение).

Deplete- to greatly decrease the supply of a resource or material (исчерпывать, истощать).

Dispose of- to throw away; to get rid of; to kill (избавляться).

Elementally- in terms of elements, basically (стихийно).

Emission- sending out from a small space into the general environment; a substance discharged into the air (выделение, излучение, выбросы).

Extinction- complete disappearance; the end of existence (угасание, искоренение).

Reservoir- a place where a liquid is collected and stored (водохранилище, водоем, резервуар).

Shrink- to become reduced in size, amount or value (отпрянуть, сокращаться).

Stable- firm and dependable; showing little change (устойчивый, стабильный).

Exercise 1. Find the word that is closest in meaning to the opposite of each word.

1. Stable	a. Keep
2. Contamination	b. Expand
3. Extinct	c. Unsteady
4. Dispose of	d. Existing
5. Shrink	e. Purity

Exercise 2. Circle the word that best completes each sentence.

1. The (constraints / contamination) of being in prison made her hate society even more.

2. A recognition that the Earth is round was one of the (elemental / shrunken) advances in thought during the time period.

3. Mother Teresa, who helped the poorest of the poor, had a great (disposal / reservoir) of love within her spirit.

4. Automobiles are responsible for some (emissions / extinction) of greenhouse gases.

5. By the end of the storm, the hikers had (depleted / reserved) even their emergency stores.

Read and translate the text.

Why should we recycle

Several reasons exist as to why we should promote recycling. Recycling helps us to convert our old products into new useful products. In other words, it is good for the environment. Since we are saving resources and are sending less trash to the landfills, it helps in reducing air and water pollution. Listed below are few reasons why we should all recycle old products.

1. Reduce pollution: the more you recycle old products the less you will require the need of buying new products. As a result there will be energy saving.

Reduction in the harmful gasses will not only help in cleaning the environment but will also clean the air we breathe. The more clean air we breathe the more positive impact it will have on our life.

2. Reduction in landfills: size of the landfills can be significantly reduced if we reduce our daily waste and recycle more. If we don't recycle the product the landfills site will become more common around the city which will certainly affect wildlife and environment. So to reduce it we must recycle as much as we can.

3. Conservation of materials: all the new products are made from the raw materials which are procured from harvesting the earth's natural resources, for example: you need wood to make paper and wooden products.

If more trees are cut down to make such products it will affect wildlife and environment in a significant way. This can be reduced if recycle more and more paper and rely less on new products.

4. Save energy: when there will be less demand for new products then of course less products will be produced which will help in saving the energy. Conservation of energy is the key element for the fight against climate change.

5. Save money: when you will recycle old products and have less dependency on new products the obviously you will end up in saving some money. That money can then be used for some other purposes. When recycling is done on large scale the money saved can have huge impact on your monthly expenditure.

Recycling is an important process that we should all be involved with for a whole variety of reasons. This article looks at the reasons why we should recycle and how this process can help to better the environment around us and the air we breathe.

Why we should recycle? There are numerous reasons why we should recycle, many of which fall under the categories of raw material conservation, energy conservation, pollution reduction and landfill reduction. Each of these aspects are described in further detail below.

Raw material conservation: most man-made products incorporate different materials in order to create the finished product. This involves harvesting raw materials such as trees, rocks and oil so that they can be processed into a useable material by manufacturers. As a result of this and to meet growing demand, reserves of these raw materials are depleting and mining operations have a significant impact on vast areas of many different countries.

Deforestation is a prime example of how harvesting natural resources is harming the environment and this is a key reason why we should recycle. This impact can be reduced if we recycle increasing quantities of used products such as paper and furniture.

Energy conservation: recycling reduces the amount of energy required to create new products. If we didn't recycle paper, large areas of forest would have to be chopped down to meet global paper demands. The trees from these forests would then have to be transported before been manufactured into the finished product. The same process applies for a wide range of products such as plastics and metals, only they require different raw materials to be harvested.

By recycling, we are cutting out the energy requirements for the mining of new raw materials. This is a very important reason why recycling is important, as energy conservation is one of the key ingredients for the fight against climate change.

Pollution reduction: tied in with the energy saving concept is a reduction in pollution levels. This can come as a result of manufacturing processes becoming more efficient and requiring less energy to manufacture a product. Although clean energy technologies exist, most products manufactured across the globe make use of energy that has been produced by the burning of fossil fuels.

Any reduction in CO₂ or other harmful gases is not only a key ingredient for the fight against climate change, but a key ingredient for cleaning the air we breathe. If pollution levels can be cut by a significant level, this can have a positive impact on the health of a countries population.

Vocabulary.

Useful – effective; helping you to do or achieve something (полезный).

Trash – rubbish (мусор, отбросы).

Landfill – getting rid of large amounts of rubbish by burying it, or a place where rubbish is buried.

Expenditure –the total amount of money that a government or person spends (расход, трата).

Raw – (of materials) not processed (необработанные материалы).

Pollution –damage caused to water, air, etc. by harmful substances or waste (загрязнение).

Deforestation –the cutting down of trees in large area; the destruction of forests by people (обезлесение).

Exercise 1. Answer the questions.

1. Why should we reduce pollution?
2. Why should we reduce in landfills?
3. Why should we conserve materials?
4. Why should we save energy and money?
5. What is deforestation?
6. What do you understand by energy conservation?
7. What is one of the key ingredients for the fight against climate change?
8. What do you understand by pollution reduction?

Exercise 2. Decide if the following statements are true or false.

1. Recycling helps to convert our old products into new useful products. T/F.
2. Recycling helps in reducing air and water pollution. T/F.
3. The more we recycle old products the less we shall need new ones. T/F.

4. Energy conservation is important for the fight against climate change. T/F.
5. Any reduction in CO₂ is important for cleaning the air we breathe. T/F.

Read and translate the text.

Rainforest Alliance

Landfill reduction: the rainforest alliance is a non-governmental organization (NGO) working to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behavior. Based in New York City with offices throughout North and South America, Asia, Africa and Europe, it operates in more than 70 countries. It was founded in 1987 by Daniel Katz, who serves on its board of directors, and is led by President Nigel Sizer.

The rainforest alliance aims to harness market forces to arrest the major drivers of deforestation and environmental destruction: timber extraction, agricultural expansion, cattle ranching and tourism. The organization trains farmers, foresters and tourism operators in sustainable practices that conserve land and waterways, improve livelihoods, and protect workers and communities. It also helps them access the financing necessary to implement sustainability changes. Farms and forestry enterprises are audited against rigorous standards maintained by the Sustainable Agriculture Network and the Forest Stewardship Council — international NGOs the rainforest alliance helped to found. Those farms and forestry enterprises that pass both annual and surprise audits are certified by the organization and earn the right to use the rainforest alliance certified seal. Tourism businesses that adopt established best management practices can use the rainforest alliance certified mark as well. The seal helps consumers support responsible farmers, foresters and tourism businesses by identifying products sourcing ingredients from these farms and services that have implemented best practices.

The more we recycle, the more we can help to reduce the burden on local and national landfill sites. As population levels increase, we will need to find additional landfill sites, which will not harm the surrounding environment and wildlife.

Vocabulary.

Biodiversity –the number and types of plant and animal species that exist in a particular environmental area or in the world generally, or the problem of protecting this (биологическое разнообразие).

Livelihood – (the way someone earns) the money people need to pay for food, a place to live, clothing, etc. (средства к существованию).

Rigorous –careful to look at or consider every part of something to make certain it correct or safe; severe or strict (строгий, суровый, безжалостный).

Forester –a person who is in charge of taking care of a forest (лесничий, лесник).

Burden – a heavy LOAD that you carry; something difficult or unpleasant that you have to deal with or worry about (ноша, груз, бремя, обуза).

Exercise 1. Answer the questions.

1. Where was the Rainforest Alliance based and where are its offices?
2. What is NGO?
3. What are the aims of the Rainforest Alliance?
4. How is this organization connected with farmers, foresters and tourism operators?
5. What farms and forestry enterprises are certified by the organization and earn the right to use the rainforest alliance certified seal?
6. What tourism businesses can use the rainforest alliance certified mark as well?
7. How does this seal help consumers?
8. Why should we find additional landfill sites?

Exercise 2. Decide if the following statements are true or false.

1. The rainforest alliance is a non-governmental organization (NGO). T/F.
2. The organization trains farmers, foresters and tourism operators. T/F.
3. Farms and forestry enterprises are audited against rigorous standards. T/F.
4. The more we recycle, the more we protect the environment. T/F.
5. The rainforest alliance is an actual organization nowadays. T/F.
6. The seal of this organization you can often see on many products. T/F.

Read and translate the text.

Ecologically healthy Swiss food

Food and drink keep body and soul together is a proverb often displayed in kitchen and dining rooms at Swiss homes. It shows that they take food seriously and meals are the center of family life.

Typical Swiss food: Switzerland has its share of snowcapped mountains and luscious green valleys where cows graze. Toward the end of the day, you can still hear the deep sound of alphorns - the long wooden horns used to summon the cows from the mountainsides - intermingled with the ringing of cowbells as the herds make their way down the slopes to find shelter for the night. Alpine farms make cheese with all that milk. Gruyère or Emmental are famous cheeses all over the world.

Milk from those cows you can see grazing in the Swiss valleys also led to Switzerland's greatest contribution to the international pantry: milk chocolate. Chocolate is the country's biggest export. There are several chocolate factories; should you visit one, you will be instantly aware of the delicious aroma of sweetened cocoa and milk around you.

Switzerland has a reputation for marrying health and nature, and many people, including entire families, make a weekend pastime of hiking the woods with a knapsack, gathering fresh elderberries, rosehips, dandelion, chamomile, and flowers from linden trees to make herbal teas and other health foods.

A Swiss food day: the Swiss start the day by eating a hearty breakfast even though their main meal, the Swiss equivalent of dinner, is eaten at midday. A typical menu would bring to the table vegetable or cheese soup, followed by a dish of poultry, beef, or fish, served with rosti in the German or French regions but with pasta in the Italian ones.

Swiss people like to take a break around four o'clock for coffee, desserts, and pastries; finishing off the day with a light supper as their evening meal - with omelets as the preferred option in the French speaking regions, antipasto in the Italian ones, sausages and cold cuts of meat where the German influence weights. A fondue is more likely to be the choice for a meal to share with friends.

Swiss cooking: you will find two cooking schools in Switzerland: *haute cuisine*, from France, and true cooking.

Haute cuisine: this highly sophisticated gourmet cooking was born in France. French cooks brought it to Switzerland.

It involves specific carving and dicing techniques, rich sauces - plenty of cream - and highly crafted garnishes, often expensive ingredients - truffles, foie gras, exotic fruits, vintage wine. Complex dishes taking hours of preparation are a feature of haute cuisine. Hotels and restaurants cook food this way.

Traditional or true cooking: the way Swiss cooks prepared the local fare, using regional, seasonal and festive food recipes; sometimes it is referred as true cooking.

Vocabulary.

Soul –the spiritual part of a person which some people believe continues to exist in some form after their body has died, or the part of a person which is not physical and experiences deep feelings and emotions (душа).

Luscious-(of an area of countryside) very green and attractive (сочный, наливной).

Horn –a curved musical instrument made of metal, which is narrow at the end you blow down to make a sound, and wider towards the other end (рог, горн, гудок, свисток).

Graze –to (cause animals) eat grass (пасти).

Pantry –a small room or large cupboard in a house where food is kept (кладовая).

Elderberry –ягода бузины.

Exercise 1. Answer the questions.

1. What proverb is often displayed in kitchen and dining rooms at Swiss homes?
2. What is typical Swiss food and how is this food produced?
3. Name the Switzerland's greatest contribution to the international pantry.
4. What reputation does Switzerland have?
5. What is their typical menu?
6. What meal is more likely to be the choice?
7. Name the two cooking schools in Switzerland.

Exercise 2. Translate the following sentences using the key words from the vocabulary above.

1. Snow-capped mountains and hills have snow on the top of them.
2. There was snow on the hill tops but not in the valley.
3. The farmer grazes cattle on this land in the summer months.
4. Our window looked out on a beautiful alpine scene.
5. It's an ecologically friendly means of transport.

Read and translate the text.

Engineering psychology

Engineering psychology is an applied subfield that focuses on improving and adapting technology, equipment, and work environments to enhance human behavior and capabilities. It is highly related to the field of ergonomics, which is the science of arranging and designing things so that people can use them safely and efficiently. Engineering psychologists are interested in understanding the capabilities and limitations of human behavior and developing and adjusting systems to maximize these abilities and prevent errors.

History of engineering psychology: the field originated as an area within experimental psychology that grew increasingly important during World Wars I and II. Today, the field is growing significantly as people spend more and more time interacting and utilizing technology and equipment in their daily and work lives.

Facts about engineering psychologists: engineering psychologists utilize psychological principles to solve real world problems.

People who work in this profession are able to help improve, and sometimes even save, human lives. By minimizing the risks of accidents and errors, engineering psychologists can make products, systems and workplaces safer.

Engineering psychologists are able to make the technology we use every day more reliable, useful, and safe. Some examples of products that they might work to design or improve include GPS systems, mobile phones, medical equipment, military equipment, aviation technology, traffic systems and motor vehicles.

These professionals can specialize in a number of different areas such as human-computer interaction, aerospace, usability, human performance, education and training, virtual reality, health care systems and technology, product design, workplace safety, environmental safety, and ergonomics, just to name a few.

What do engineering psychologists do? Some tasks that an engineering psychologist might perform in this line of work include: analyzing how people interact and use equipment and technology, exploring ways to make technology more accessible to people with disabilities, explaining workplace accidents and searching for ways to prevent such things from happening again in the future, implementing user feedback into future iterations of product designs, surveying populations to learn more about user needs or to discover which products appeal to specific demographics, creating safe products and designs intended to minimize human errors, designing medical equipment to minimize the risks of medical mistakes.

Where do engineering psychologists work? Engineering psychologists are employed in a range of different areas. The private sector, such as businesses and corporations, is the largest area of employment. Other employers might include colleges, universities and government agencies.

Training and educational requirements for engineering psychology: the training and education needed to become an engineering psychologist can vary depending upon the specialty area in which you choose to work. Just a few of the main specialty areas include human factors, ergonomics, and usability engineering and human-computer interaction.

A master's degree in a related field is generally considered the minimum needed for entry into the field, although opportunities and pay are often much higher for those with doctorate degrees. A number of universities offer graduate programs specifically in engineering psychology. Such programs include coursework in areas such as cognition, engineering, perception, statistics, research methods and learning.

Job outlook for engineering psychologists: since the majority of engineering psychologists are employed in the private sector, the performance and growth rate of companies has a strong influence on job growth and demand in this field. However, as corporations become increasingly aware of the valuable role that engineering psychologists can play in the design and development process, the demand for qualified professionals continues to grow.

Vocabulary.

Adapt – to change something to suit different conditions or uses (адаптироваться).

Enhance – to improve the quality, amount or strength of something (усиливать, повышать).

Capability – the ability to do something (способность, возможность).

Accident – something bad which happens that is not expected or intended, and which often damages something or injures someone (несчастный случай).

Military equipment – военная экипировка

Interaction – when two or more people or things communicate with or react to each other (взаимодействие).

Implement – to put a plan or system into operation (выполнять, осуществлять, привести в жизнь).

Survey – to look at or examine all of something, especially carefully (обозревать, исследовать, рассматривать).

Cognition – when you think or use a conscious mental process (познание, знание).

Exercise 1. Answer the questions.

1. What is engineering psychology?
2. What is the history of engineering psychology?
3. What facts do you know about engineering psychologists?
4. Name a number of different areas where these professionals can specialize?
5. Where do engineering psychologists work?
6. What are educational requirements and training for engineering psychology?
7. What information do graduate programs specifically in engineering psychology include?
8. What can you say about job outlook for engineering psychologists?

Exercise 2. Decide if the following statements are true or false.

1. Engineering psychology focuses on improving technology. T/F.
2. Engineering psychologists solve real world problems. T/F.
3. People in this profession can help and sometimes save human lives. T/F.
4. Engineering psychologists are employed in a range of different areas. T/F.
5. The demand for qualified professionals continues to grow. T/F.

Read and translate the text.

Renewable energy in Kazakhstan

The Republic of Kazakhstan has enormous renewable energy potential, particularly from wind and small hydropower plants. The country has the potential to generate 10 times as much power as it currently needs from wind energy alone. But renewable energy accounts for just 0.6 percent of all power installations. Of that, 95 percent comes from small hydropower projects. The main barriers to investment in renewable energy are relatively high financing costs and an absence of uniform feed-in tariffs for electricity from renewable sources. The amount and duration of renewable energy feed-in tariffs are separately evaluated for each project, based on feasibility studies and project-specific generation costs. Power from wind, solar, biomass and water up to 35 MW, plus geothermal sources, are eligible for the tariff and transmission companies are required to purchase the energy of renewable energy producers. An amendment that introduces and clarifies technology-specific tariffs is now being prepared. It is expected to be adopted by Parliament by the end of 2014. In addition, the World Bank's Ease of Doing Business indicator shows the country to be relatively investor-friendly, ranking it in 10th position for investor protection.

Kazakhstan is a party to the UN Framework Convention on Climate Change (1995) and ratified the Kyoto Protocol in 2009. Kazakhstan has committed to reduce greenhouse gas emissions. Having more renewable energy in the energy balance of Kazakhstan is one of the most effective mechanisms to reduce harmful effects of the energy sector and to diversify the national power generation capacity. To help Kazakhstan meet its goals for renewable energy generation, the European Bank for Reconstruction and Development (EBRD) is launching the Kazakhstan Renewable Energy Financing Facility (KazREFF). The KazREFF aims to provide development support and debt finance to renewable energy projects which meet required commercial, technical and environmental criteria. Renewable energy technologies supported will include solar, wind, small hydropower, geothermal, biomass, and biogas. The Facility comprises an amount of up to €50 million for financing projects together with up to €20 million of concessional finance from Clean Technology Fund (CTF), and the technical assistance funded by the Japanese government through the Japan-EBRD Cooperation Fund (JECF).

Hydropower: small hydropower plants - the most rapidly developing areas of use of renewable energy in the country. Thus, in the period from 2007 to 2010 the Almaty region has introduced five small hydropower plants with a total installed capacity of 20 MW. One of the important areas of energy efficiency of Kazakhstan's economy is construction of hydroelectric power plants on small rivers operating without retaining dams. Hydropower accounts for approximately 13% percent of Kazakhstan's total generating capacity delivering around 7.78 TWh from 15 large (450 MW) hydropower station with a total capacity of 2.248 GW. Large

hydropower plants comprise the Bukhtyrma (750 MW), Shulbinsk (702 MW) and Ust-Kamenogorsk (315 MW) plants on the Irtysh river, the Kapshagai (364 MW) plant on the Ili River, the Moinak (300 MW) plant on the Charyn river and the Shardarinskaya (104 MW) plant on the Syrdarya river. Small (1–10 MW) and medium-scale (10–50 MW) hydropower projects have become more popular because of their low cost, reliability and apparent environmental friendliness. There are seven small hydropower plants (<10 MW), with a total installed capacity of 78 MW and an estimated potential of 13 TWh, spanning east and south Kazakhstan, Zhambyl and Almaty provinces. According to the experts, provided the smaller hydropower stations are installed about 8 billion kWh can be produced per year and this is more than enough to meet the demand that is now satisfied through imports from Central Asia. In December 2011 the Moynak hydropower plant (300 MW) was put into operation within the realization of the State Program for Rapid Industrial-innovative Development. A number of the projects to build smaller hydropower plants are being implemented in southern Kazakhstan.

Solar energy: Kazakhstan has areas with high insolation that could be suitable for solar power, particularly in the south of the country, receiving between 2200 and 3000 h of sunlight per year, which equals 1200–1700 kW/m² annually. Both concentrated solar thermal and solar photovoltaic (PV) have potential. There is a 2 MW solar PV plant near Almaty and six solar PV plants are currently under construction in the Zhambyl province of southern Kazakhstan with a combined capacity of 300 MW. In addition to solar PV, concentrated solar thermal is advantageous given it does not require water for operation so can be used in desert and semi-desert areas, the materials (steel, glass, and concrete) are domestically produced in Kazakhstan and readily available, and solar thermal plants store energy in the form of heat, which is far more efficient than the batteries used in PV systems and allows electricity to be produced on demand, even after the sun has set, enabling both base and peak loads to be met. There are no current plans to install a concentrated solar thermal plant although the government plans to create 1.04 GW of renewable energy capacity by 2020. The South-Kazakhstan, Kyzylorda oblast and the Aral region are the most suitable locations to build solar power plants.

The most significant project in this field implemented in 2002 in Kazakhstan and financed by the UN was to install 50 prism solar power plants with capacity of 100 liters of water each, and 50 solar stills, using the water from the Syr Darya river to provide the residents of two villages in the Aral region for drinking water and heating.

In particular, according to the Plan of Activities for Alternative and Renewable Energy in Kazakhstan, it is planned to put into operation about 28 solar energy projects until the end of 2020 with total installed capacity of 713.5 MW.

Wind energy: Kazakhstan's steppe geography makes it suitable for wind energy applications and the estimated potential of wind energy that can be

economically developed is about 760 GW. About 50% of Kazakhstan's territory has average wind speeds suitable for energy generation (4–6 m/s) with the strongest potential in the Caspian Sea, central and northern regions. The most promising individual sites are in the Almaty region in the Djungar (Dzhungarian) Gates, 600 km northeast of Almaty close to the Xinjiang border and the Chylyk Corridor 100 km east of Almaty. Wind potentials of 525 Wm² in the Djungar Gates and 240 Wm² in the Chylyk corridor have been estimated with power production from wind turbines potentially achieving 4400 kW/h/MW and 3200 kW/h/MW respectively. Currently, the Ministry of industry and new technologies selected 10 sites to build large wind power plants (WPP) with total capacity of 1,000 MW with a view to commercial production of electricity in the amount of 2-3 billion kWh. Currently only one wind energy plant is operating in Kazakhstan; the Kordai wind power plant with 1500 kW capacity was launched in December 2011 in Zhambyl region.

One of Kazakhstan's power companies, Samruk-energy JSC, was recently awarded a \$94 million loan from the Eurasian development bank to build Kazakhstan's largest wind farm. The project will produce 172 million kilowatt-hours of electrical energy per year, save more than 60 million tons of coal, and reduce emissions of greenhouse gases.

Bio energy: Kazakhstan has 76.5 Mha agricultural land, 10 Mha forest and 185 Mha steppe grasslands providing abundant biomass wastes and residues which have the potential to generate arrange of bio energy services. Kazakhstan produces and exports crops such as wheat (winter and spring), rye(winter), maize (for grain), barley (winter and spring), oats, millet, buckwheat, rice and pulses, with an average grain yield of 17.5–20 Mt, which equates to roughly 12–14 Mt of biomass wastes. Biomass wastes are currently poorly exploited and only ~10% of the total volume of the residues issued, mostly as a feed additive for livestock; the proportion of rural households using biomass cook stoves for cooking and heating is currently unknown. Organic wastes are also a potential source of energy and at least 400,000 households are known to keep cattle, horses and sheep. It has been estimated that electricity generation potential in Kazakhstan from biomass is 35 billion kWh per year and heat generation potential is 44 million Gcal per year. Various external funding agencies (UNDP, GEF, HIVOS Foundation) have supported the development of biogas initiatives including the Biogas Training Centre at the Eco-museum in Karanga (2002–2003) and the 'Azure Flame' Central Kazakhstan Biogas Education Centre (2004–2005) however despite this promotion there is only one large scale biogas unit currently in operation in the country which is a 360 k. We biogas plant run at Vostok village in the Kostanai region. The Vostok biogas unit consists of two 2400 m³ digesters operating with a feedstock of 40 t/day of cow, sheep and camel manure, grain residues and 1t/day of slaughter house waste. The plant was installed in 2011 by Karaman-K Ltd. and Zorg Biogas with an aim of delivering 3 million kWh of electricity annually. Another potential area is the use of

biogas, which is produced from the waste of farms and poultry factories. Kazakhstan has a significant number of livestock and poultry. Methane production potential of the waste in cattle is more than 85 thousand tons. Potential methane production from waste-water communal services is about 3 million tonnes.

Barriers to renewable energy: in spite of considerable renewable energy potential there are still significant barriers to address including: low electricity tariffs; transmission losses and inefficient technologies; weak regulatory and legal frameworks to stimulate the use of renewable energy in the electricity sector; persistent governmental body reforms; inadequate levels and quality of scientific support; awareness and information barriers; and a high-risk business environment.

Renewable energy projects: In 2016, Kazakhstan's capital Astana started testing and implementing energy-saving systems in construction. Thus, the Kazakhstan Centre for Modernization and Development of Housing and Communal Services moved to a new building equipped with energy-saving wind and solar energy systems.

Vocabulary.

Feasibility –whether something can be made, done or achieved, or is reasonable (осуществимость, выполнимость).

Eligible – having the necessary qualities or satisfying the necessary conditions (могущий быть избранным).

Capacity –the total amount that can be contained or produced (мощность).

Concession – a reduction in the usual price of something, which is available to student or young, old or unemployed people (льгота, скидка).

Reliable –something or someone that is reliable can be trusted or believed because they work or behave well in the way you expect (надежный).

Insolation –exposure to the sun's rays.

Loan – a sum of money which is borrowed, often from a bank, and has to be paid back, usually together with an extra amount of money that you have to pay as a charge for borrowing (заем).

Emission – sending out from a small space into the general environment; a substance discharged into the air (выделение, излучение, выбросы).

Abundant –more than enough (изобильный).

Oat –овес.

Promotion –encourage, raise (продвижение, поощрение, поддержка, реклама).

Feedstock –raw material to supply or fuel a machine or industrial process.

Livestock – farm animals regarded as an asset (домашний скот).

Poultry –birds, such as chickens that are bred for their eggs and meat (домашняя птица).

Exercise 1. Answer the questions.

1. What is renewable energy potential of the Republic of Kazakhstan?
2. What renewable energy technologies supported in Kazakhstan can you name?
3. How do we use hydropower energy?
4. How do we use solar energy?
5. How do we use wind energy?
6. How do we use bio energy?
7. Are there any barriers to renewable energy? What are they?
8. What renewable energy projects do we have?

Exercise 2. Decide if the following statements are true or false.

1. Kazakhstan has enormous renewable energy potential. T/F.
2. Small hydropower plants produce renewable energy in the country. T/F.
3. Kazakhstan has areas with high insolation. T/F.
4. Kazakhstan's steppe makes it suitable for wind energy applications. T/F.
5. Kazakhstan generates arrange of bio energy services. T/F.

Read and translate the text.

Environmental issues in Hong Kong

In 1989, the Hong Kong government realized that Hong Kong was in danger of becoming a vast, densely populated city. Due to the growth of the economy and business sectors, the water, waste and air pollution cause an adverse effect on the balance of ecology in Hong Kong.

Factories, farms and restaurants in the New Territories dump large amounts of sewage and even untreated waste into the streams and the sea. It makes the New Territories' streams be 'no better than open sewers'. This severe damage is irreversible and the creatures in the sea are the direct victims of the capitalized city's effort.

The pink dolphin is one of the victims. Under threat from chemical pollution, increased sea traffic and the destruction of much of the natural shoreline for land reclamation, the number of pink dolphins has dramatically declined as the city continues to develop.

The nature reserve and birds in Mai Po Marsh are the other victims. They are threatened by the pig sewage flooding as well as the increased pollution from Shenzhen. Yet according to WWF Hong Kong the number of the endangered black-faced spoonbills wintering in Mai Po has risen from roughly 35 in the late 1980 years to 152 after 10 years. About 400 are spotted after 2000. Estimates on how many of these birds remain in the wild vary from 2,000 to 1,000.

The oyster farms have been throttled by a mixture of pollution and competition from cheaper oyster cultivation across the border in China.

Air pollution is another serious problem. Air pollution has got noticeably worse since the late 1990 years, with smoggy days becoming increasingly regular. Smoke-belching factories, ceaseless construction and large numbers of diesel vehicles have made for dangerous levels of particulate matter and nitrogen dioxide. Not only the flora and fauna are affected but also humans. Cases of asthma and bronchial infections have soared in recent years, and doctors place the blame squarely on poor air quality.

According to a Baptist University study, daily average minimum temperatures have increased by 0.02°C annually between 1965 and 2003, due to the "concrete jungle" which traps heat during the daytime and releases it at night. Average daily maximum temperatures have fallen by 0.014°C each year, as air pollution is blocking solar radiation. Resulting increased night time ambient temperatures incite families to use domestic air-conditioning, which further compounds the problem.

Research has shown that the ambient air-temperature in urban areas can be some 5°C higher than non-built-up areas. The Hong Kong Polytechnic University commissioned NASA to take a high-resolution thermal image of urban Hong Kong by satellite at 10:40 pm on 4 August 2007, which showed at least a 4-degree difference between the coolest areas and the "urban heat islands". The variations are attributable to greater absorbency of man-made materials, and building density which restrict air-flow. The urban heat island had expanded into Hung Hom since January, when the first image was taken.

There has been increasing concern since 2006 over the "wall effect" caused by uniform high-rise developments which adversely impact air circulation. Due to the density of Hong Kong's population and the economies of scale of mass developments, there is the tendency of new private tower block developments with 10 to over 100 towers, ranging from 30-to-70-storeys high. Developers of housing estates are financially motivated to maximize the view, at the expense of the free-flow of air. Huge wall-like estates along the waterfront are often constructed.

In-fill developments will tend to be done by smaller developers with less capital. These will be smaller in scale, and less prone to the wall effect.

In May 2007, citing concern over developments in West Kowloon, and near Tai Wai Yuen Long railway stations, some legislators called for a law to stop developers from constructing tall buildings which adversely affect air flow in densely populated areas, but the bid failed. In 2007, residents of Tai Kok Tsui, increasingly aware of the problem, have been lobbying against further proliferation of such high-rises in their area which threaten the last air corridor.

Vocabulary.

Vast –extremely big (обширный, громадный, огромный, грандиозный).

Sewage –waste matter such as water or human urine or solid waste (сточные воды, нечистоты).

Victim –someone or something which has been hurt, damaged or killed or has suffered, either because of the actions of someone or something else, or because of illness or chance (жертва).

Spoonbill –a tall mainly white or pinkish wading bird related to ibises, having a long bill with a very broad flat tip.

Oyster –устрица.

Ceaseless –continuous; without stopping (непрестанный, непрерывный).

Ambient –(especially of environmental conditions) existing in the surrounding area (окружающий).

Legislator –a member of a group of people who together have the power to make laws (законодатель).

Bid –предлагать, объявлять.

Exercise 1. Answer the questions.

1. When did the Hong Kong government realize that Hong Kong was in danger of becoming a vast, densely populated city?

2. What makes the New Territories' streams be 'no better than open sewers'?

3. What animals and birds are in danger because of the human activities?

5. Is air pollution a serious problem in Hong Kong?

6. What is 'wall effect'?

Exercise 2. Translate the following sentences using the key words from the vocabulary above.

1. A vast audience watched the broadcast.

2. Sewage is being pumped into the sea, from where it pollutes our beaches.

3. I went outside to get some fresh air.

4. We won't invest in any company that pollutes the environment.

5. Hot water circulates through the heating system.

6. Overpopulated country has too many people.

Read and translate the text.

Global warming

Global warming and climate change are terms for the observed century-scale rise in the average temperature of the Earth's climate system and its related effects. Multiple lines of scientific evidence show that the climate system is warming. Although the increase of near-surface atmospheric temperature is the measure of global warming often reported in the popular press, most of the

additional energy stored in the climate system since 1970 has gone into the oceans. The rest has melted ice and warmed the continents and atmosphere. Many of the observed changes since the 1950 years are unprecedented over tens to thousands of years.

Scientific understanding of global warming is increasing. The Intergovernmental Panel on Climate Change (IPCC) reported in 2014 that scientists were more than 95% certain that global warming is mostly being caused by human (anthropogenic) activities, mainly increasing concentrations of greenhouse gases such as methane and carbon dioxide (CO₂). Human-made carbon dioxide continues to increase above levels not seen in hundreds of thousands of years. Methane and other, often much more potent, greenhouse gasses are also rising along with CO₂. Currently, about half of the carbon dioxide released from the burning of fossil fuels remains in the atmosphere. The rest is absorbed by vegetation and the oceans. Climate model projections summarized in the report indicated that during the 21st century the global surface temperature is likely to rise a further 0.3 to 1.7 °C (0.5 to 3.1 °F) for their lowest emissions scenario and 2.6 to 4.8 °C (4.7 to 8.6 °F) for the highest emissions scenario. These findings have been recognized by the national science academies of the major industrialized nations and are not disputed by any scientific body of national or international standing.

Future climate change and associated impacts will differ from region to region around the globe. Anticipated effects include warming global temperature, rising sea levels, changing precipitation, and expansion of deserts in the subtropics. Warming is expected to be greater over land than over the oceans and greatest in the Arctic, with the continuing retreat of glaciers, permafrost and sea ice. Other likely changes include more frequent extreme weather events including heat waves, droughts, heavy rainfall with floods and heavy snowfall; ocean acidification; and species extinctions due to shifting temperature regimes. Effects significant to humans include the threat to food security from decreasing crop yields and the abandonment of populated areas due to rising sea levels. Because the climate system has a large "inertia" and greenhouse gasses will stay in the atmosphere for a long time, many of these effects will not only exist for decades or centuries, but will persist for tens of thousands of years.

Possible societal responses to global warming include mitigation by emissions reduction, adaptation to its effects, building systems resilient to its effects, and possible future climate engineering. Most countries are parties to the United Nations Framework Convention on Climate Change (UNFCCC), whose ultimate objective is to prevent dangerous anthropogenic climate change. Parties to the UNFCCC have agreed that deep cuts in emissions are required and that global warming should be limited to well below 2.0 °C (3.6 °F) relative to pre-industrial levels, with efforts made to limit warming to 1.5 °C (2.7 °F).

Public reactions to global warming and concern about its effects are also increasing. A global 2015 Pew Research Center report showed a median of 54% consider it "a very serious problem". There are significant regional differences, with Americans and Chinese (whose economies are responsible for the greatest annual CO₂ emissions) among the least concerned.

Vocabulary.

Global warming – the gradual increase in the overall temperature of the earth's atmosphere due to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other pollutants (глобальное потепление).

Greenhouse gases – gases that contribute to the greenhouse effect by absorbing infrared radiation; carbon dioxide and chlorofluorocarbons are examples of greenhouse gases.

Greenhouse effect-the trapping of the sun's warmth in a planet's lower atmosphere, due to the greater transparency of the atmosphere to visible radiation from the sun than to infrared radiation, emitted from the planet's surface (парниковый or тепличный эффект).

Fossil fuel – things like coal or oil, that come from plants or animals that are millions of years old (полезные ископаемые).

Vegetation –plants in general or plants which are found in a particular area (растительность).

Dispute –to disagree with something that someone says (спорить, оспаривать).

Glacier-a large mass of ice which moves slowly (ледник, глетчер).

Mitigation- the action of reducing the severity, seriousness, or painfulness of something (смягчение, ослабление).

Permafrost-an area of land which is permanently frozen, whose surface melts in the summer and freezes again in the autumn (вечная мерзлота).

Emission – sending out from a small space into the general environment; a substance discharged into the air (выделение, излучение, выбросы).

Extinction- complete disappearance; the end of existence (угасание, искоренение).

Exercise 1. Answer the questions.

1. What is Global warming?
2. Will future climate change and associated impacts differ from region to region around the globe?
3. Where is warming expected to be greater over land or over the oceans?
5. What is UNFCCC?
6. Whose economies are responsible for the greatest annual CO₂ emissions?

Exercise 2. Translate the following sentences using the words from the vocabulary above.

1. The Mediterranean climate is good for growing citrus fruits and grapes.
2. When we retire, we are going to move to a warmer climate.
3. There has been a sudden rise in temperature over the past few days.
4. Green Party called for a reduction in the emission of greenhouse gases.
5. These factories are releasing toxic gases into the atmosphere.

Read and translate the text.

Greenhouse effect

The greenhouse effect is the process by which radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be without its atmosphere.

If a planet's atmosphere contains radiatively active gases (i.e., greenhouse gases) the atmosphere will radiate energy in all directions. Part of this radiation is directed towards the surface, warming it. The downward component of this radiation – that is, the strength of the greenhouse effect – will depend on the atmosphere's temperature and on the amount of greenhouse gases that the atmosphere contains.

On Earth, the atmosphere is warmed by absorption of infrared thermal radiation from the underlying surface, absorption of shorter wavelength radiant energy from the sun, and convective heat fluxes from the surface. Greenhouse gases in the atmosphere radiate energy, some of which is directed to the surface and lower atmosphere. The mechanism that produces this difference between the actual surface temperature and the effective temperature is due to the atmosphere and is known as the greenhouse effect.

Earth's natural greenhouse effect is critical to supporting life. Human activities, primarily the burning of fossil fuels and clearing of forests, have intensified the natural greenhouse effect, causing global warming.

The mechanism is named after a faulty analogy with the effect of solar radiation passing through glass and warming a greenhouse. The way a greenhouse retains heat is fundamentally different, as a greenhouse works by reducing airflow and retaining warm air inside the structure.

Vocabulary.

Greenhouse gases – gases that contribute to the greenhouse effect by absorbing infrared radiation; carbon dioxide and chlorofluorocarbons are examples of greenhouse gases.

Greenhouse effect-the trapping of the sun's warmth in a planet's lower atmosphere, due to the greater transparency of the atmosphere to visible radiation from the sun than to infrared radiation, emitted from the planet's surface (парниковый or тепличный эффект).

Absorb-to take something in, especially gradually (поглощать).

Flux-a substance added to a metal to make it easier to SOLDER (=join by melting) to another metal (флюс, плавень).

Fossil fuel – things like coal or oil, that come from plants or animals that are millions of years old (полезные ископаемые).

Radioactivity – the emission of ionizing radiation or particles caused by the spontaneous disintegration of atomic nuclei (радиоактивность).

Radiation – the emission of energy as electromagnetic waves or as moving subatomic particles, especially high-energy particles which causes ionization (радиация).

Substance – the real physical matter of which a person or thing consists and which has a tangible, solid presence (вещество).

Ecology – the branch of biology that deals with the relations of organisms to one another and to their physical surroundings.

Ecosystem – a biological community of interacting organisms and their physical environment.

Exercise 1. Answer the questions.

1. What is Greenhouse effect?
2. What are Greenhouse gases?
3. What human activities have intensified the natural greenhouse effect, causing global warming?
5. What analogy is the mechanism named after?
6. How does Greenhouse effect work?

Exercise 2. Decide if the following statements are true or false.

1. Greenhouse gases in the atmosphere radiate energy. T/F.
2. Earth's natural greenhouse effect is critical to supporting life. T/F.
3. Human activities have intensified the natural greenhouse effect. T/F.
4. The way a greenhouse retains heat is fundamentally different. T/F.

Read and translate the text.

A greener transport system in Denmark

Denmark has a well-developed and generally environmentally friendly transport system. The transport system has been improved in several areas including

public transport, integration of the different modes of transport and new technologies like electric vehicles and modular vehicle combinations. However, Denmark is determined to continuously reduce the impact of the transport sector on the environment.

Higher mobility and accessibility are important elements for growth and welfare in Denmark. Every day the citizens need transport to and from work as well as companies has a need to transport goods to customers – both locally and globally.

The development of a greener transport system in Denmark combines growth and a high level of mobility, thereby ensuring both a well-integrated transport system and less noise and pollution.

The future solutions are to be found in a combination of different instruments and innovative technologies. A greener transport system combines a more efficient use of traditional fuels, the utilization of electric vehicle technologies, buses using bio-gas and a strong public transport sector.

Facilitating a greener transport system in Denmark is of high priority to the Danish Government. The aim is to make Denmark independent from fossil fuels by focusing on several initiatives such as less congestion, more use of public transports, more competitive railway sector and an increased use of energy efficient and environmentally friendly technologies.

Vocabulary.

Denmark-Дания

Impact – the action of one object coming forcibly into contact with another; a marked effect or influence (удар, воздействие, влияние).

Vehicle- something that moves things or people (машина).

Environment – the surroundings or conditions in which a person, animal or plant lives or operates (окружающая среда).

Accessible-able to be reached or easily got (доступный).

Welfare- help given, especially by the state or an organization, to people who need it, especially because they do not have enough money (обеспечение, социальная помощь, благополучие, благосостояние).

Ensure- to make something certain to happen (обеспечивать).

Initiative- a new action or movement, often intended to solve a problem (инициатива, начин).

Congested- too blocked or crowded and causing difficulties; describes roads and towns where there is too much traffic and movement is made difficult (перенаселенный, загруженный).

Exercise 1. Answer the questions.

1. What country has a well-developed and generally environmentally friendly transport system?

2. What does the development of a greener transport system in Denmark combine?
3. What are the future solutions?
4. What does a greener transport system combine?
5. What is the aim for facilitating a greener transport system in Denmark?

Exercise 2. Translate the following sentences using the key vocabulary above.

1. The anti-smoking campaign had made quite an impact on young people.
2. Road vehicles include cars, buses and trucks.
3. Tractors are farm vehicles.
4. We're not doing enough to protect the environment from pollution.
5. People are becoming far more aware of environmental issues.
6. The resort is easily accessible by road, rail and air.

Read and translate the text.

Production of natural soap in Jordan

Trinitae's use of natural ingredients and local production methods are thoughtfully chosen to give customers a high-end, uniquely Jordanian product without compromising commitment to ethics and sustainability. Producers prioritize local ingredients over imported ones, refrain from using chemicals whenever possible, and locally manufacture all of their products using raw materials to produce elegant cosmetics that enrich the body, mind and spirit.

Luxury: they believe the most luxurious skincare products that offer maximum skin health benefits will truly nourish the skin by using natural, local materials and refrain from using chemicals. Trinitae prioritizes quality over quantity, which is why they favor the richest, and often the most expensive, raw materials obtained from local sources. The result is a skincare product that is nourishing and luxurious for the skin, from initial materials to the end result.

Trinitae relies on Jordan's proximity to rich natural resources, such as the Dead Sea's mud and salts, as well as the bountiful olive trees, citrus plants, and fragrant herbs that populate the Jordan Valley. They combine these essential ingredients fresh in their soap making process, without the use of parabens, to result in an authentically Jordanian product.

Incorporating Jordan's natural resources into Trinitae products is what makes them truly unique and beneficial to the skin. While many skincare products can make your skin feel soft, Trinitae cosmetics soften your skin through natural processes, using ingredients such as olive oil, Shea butter and Dead Sea mud and salts, which are less likely to produce unpredictable side effects and create lasting results for skin.

Ethics: truly luxurious cosmetics enrich the body, but they also enrich the mind and spirit. This is accomplished when one can purchase skincare essentials with confidence that they will do no harm to the environment or local communities in the process.

Trinitae was founded on the concepts of ethics and sustainability, and the company has led several initiatives to engage Jordan's rural communities, particularly through the employment of women. Trinitae trains groups of Jordanian women in the countryside on how to make soaps, and the company sells their products at the Soap House in Amman, along with the women's handmade gift bags and soap packages.

Trinitae's commitment to ethics also reveals itself in the company's manufacturing processes. All Trinitae soaps are manufactured in Jordan, and from raw materials, which provides jobs to Jordanians. The areas most benefited by Trinitae's practices are in rural communities where the company's essential ingredients such as rosemary, thyme and citrus fruits are grown and harvested.

Sustainability: Trinitae appreciates the natural materials that makes their products special, and with this appreciation comes a desire to protect the environment.

All Trinitae products are packaged in environmentally friendly materials, from handmade paper gift boxes to recyclable plastic containers, and they employ local artisans to handcraft gift bags and soap accessories.

Their use of local ingredients reduces the amount of pollution that occurs during the shipping and manufacturing process, and maintaining their boutique-size operations ensures the preservation of Jordan's precious resources.

Vocabulary.

Jordan- Иордания.

High-end- intended for people who want very good quality products and who do not mind how much they cost.

Sustainable- able to continue over a period of time.

Refrain- to avoid doing or stop yourself from doing something (сдерживаться, воздерживаться).

Raw materials- not processed; in a natural state (свежие, натуральные материалы).

Nourishing- a nourishing drink or food makes you healthy and strong (питательный).

Proximity- the state of being near in space or time (близость, соседство).

Essential- a basic thing that you cannot live without.

Rural community- сельская местность.

Soap- мыло.

Gift bag- подарочный пакет.

Artisan- a person who does skilled work with his or her hands (ремесленник).

Shipping and manufacturing process- процесс транспортировки и процесс производства.

Exercise 1. Answer the questions.

1. What are the qualities of uniquely Jordanian products?
2. What are the benefits of Jordan's proximity to rich natural resources?
3. What natural ingredients do they use?
4. Who are the typical employers at their factories?
5. Are all their products environmentally friendly? Explain why?

Exercise 2. Decide if the following statements are true or false.

1. Producers prioritize local ingredients over imported ones. T/F.
2. Producers prioritize quality over quantity. T/F.
3. Shea butter, Dead Sea mud and salts create lasting results for skin. T/F.
4. Luxurious cosmetics enrich the body, the mind and spirit. T/F.
5. The company engaged Jordan's rural communities. T/F.

Read and translate the text.

The life giving healing properties of the Dead Sea

What can we say about the Dead Sea and the extraordinary healing properties and unique features of this area of the world located in Jordan. The Dead Sea could more likely be called "The Sea of Life" with all of the healing, medicinal and life giving properties it contains. The Dead Sea is one of the most mineral rich bodies of waters on planet earth. In fact, when you go swimming in it you float because there are so many minerals.

It's funny, but the Dead Sea is the saltiest body of water on planet earth. The salt content in the Dead Sea is 29% as compared to the 4% salt content in oceans. Because of this salt content many aquatic organisms and life that would regularly live in the sea or water is non-existent here. There are many minerals in the sea from magnesium, to potassium to dissolved bromides among others. The water is so mineral rich that soaking in it gets in your pores and is a great treatment for psoriasis on the skin topically as well as arthritis because of the mineralizing of the joints and body. It's also great for arthritis because you float so you can do therapeutic exercises and movements while giving your body and joints the minerals they need to become healthier.

Research into the mineral rich Dead Sea salt has shown that it has and can reduce wrinkles by up to 40%! This sea is great for the skin in multiple ways.

There are many aspects to the Dead Sea that give it the so many therapeutic and healing properties. The sea itself is rich in minerals and because of this it's great for the skin and joints as well as calming for the nervous system. Beyond the sea on the shore of the Dead Sea is an extremely rich Dead Sea mud that many visitors use to rub on their skin and exfoliate with in the sun. This mud is mineral rich and very beneficial for giving the skin and bloodstream minerals as well. Beyond the mineral rich sea and mud there is also a very interesting and unique fact about Jordan near the Dead Sea. This is the lowest point on earth so the atmospheric pressure is higher and there is 10% more oxygen in this region because of this. People with respiratory health concerns and conditions seem to see improvement when visiting Jordan and the Dead Sea. This means that while in the Dead Sea you are giving your body plenty of minerals as well as breathing some of the highest quality oxygen on the planet.

Not only are all these benefits amazing but research is also looking into reduced ultraviolet solar radiation levels as well in the region. Could the minerals and oxygen protect and prevent the body from being damaged by UV rays?

Vocabulary.

Heal- to make or become well again, especially after a cut or other injury (исцелять, залечивать).

Property- a quality in a substance or material, especially one which means that it can be used in a particular way (свойство).

Float- to stay on a surface of a liquid and not sink (плавать, плыть, не тонуть).

Non-existent- describes something that does not exist or is not present in a particular place (несуществующий).

Potassium-калий.

Dissolved bromide- растворенный бромид.

Psoriasis-псориаз.

Wrinkle- a small line in the skin caused by old age (морщина).

Multiply- to increase very much in number, or (in mathematics), to add a number to itself a particular number of times (умножать, увеличивать, множить).

Exfoliate- to remove dead skin cells from the surface of the skin, in order to improve the appearance.

Oxygen- кислород.

UV- describes light that has a WAVELENGTH which is after the VIOLET (=light purple) end of the range of colors that can be seen by humans. Light of this type causes the skin to become darker in the sun (ультрафиолетовые лучи).

Exercise 1. Answer the questions.

1. What can we say about the Dead Sea and the extraordinary healing properties and unique features of this area of the world located in Jordan?

2. How salty is the Dead Sea?
3. What minerals are there in the sea?
4. What healing properties does the sea have?
5. What can you say about particular location of the sea?

Exercise 2. Translate the following sentences using the key vocabulary above.

1. One of the properties of copper is that it conducts heat and electricity.
2. An empty bottle will float.
3. You can float very easily in the Dead Sea because it's so salty.
4. Sunbathing can prematurely age and wrinkle the skin.
5. In warm weather these germs multiply rapidly.
6. A healthy diet should supply all necessary vitamins and minerals.
7. The instructor told us to breathe in deeply and then breathe out slowly.
8. It's so airless in here- I can hardly breathe.

Read and translate the text.

High waters of Venice

Acqua alta is the term used in Venetia for the exceptional tide peaks that occur periodically in the northern Adriatic Sea. The peaks reach their maximum in the Venetian Lagoon, where they cause partial flooding of Venice and Chioggia; flooding also occurs elsewhere around the northern Adriatic, for instance at Grado and Trieste, but much less often and to a lesser degree. The phenomenon occurs mainly between autumn and spring, when the astronomical tides are reinforced by the prevailing seasonal winds which hamper the usual reflux. The main winds involved are the sirocco, which blows northbound along the Adriatic Sea, and the bora, which has a specific local effect due to the shape and location of the Venetian lagoon.

What are the causes? Precise scientific parameters define the phenomenon called acqua alta, the most significant of which (i.e., the deviation in amplitude from a base measurement of "standard" tides) is measured by the hydrographic station. Supernormal tidal events can be categorized as:

1) Intense when the measured sea level is between 80 cm. and 109 cm. above the standard sea level (which was defined by averaging the measurements of sea level during the year 1897).

2) Very intense when the measured sea level is between 110 cm. and 139 cm. above the standard.

3) Exceptional high waters when the measured sea level reaches or exceeds 140 cm. above the standard.

4) Generally speaking, tide levels largely depend on three contributing factors: an astronomical component, which results from the movement and alignment of celestial bodies, principally the Moon, secondarily the Sun, and marginally other planets (with effects decreasing in logarithmic relation to their distance from the Earth); this component is dependent upon the laws of the astronomical mechanics and can be computed and accurately predicted for the long run (even years or decades); a geophysical component, primarily dependent upon the geometric shape of the basin, which amplifies or reduces the astronomical component and, because it is dependent upon the laws of the physical mechanics, can be also computed and accurately predicted for the long run (even years or decades); a meteorological component, linked to a large set of variables, such as the direction and strength of winds, the location of barometric pressure fields and their gradients, precipitation, etc. Consequently, this component can only be forecast for the very short run and is the principal determinant of acqua alta emergencies that catch Venetians unprepared.

Two further contributing natural factors are the subsidence, i.e. the natural sinking of the soil level, to which the lagoon is subjected. While these phenomena would occur independently of human activity, their effects have increased because of inhabitation: the use of lagoon water by the industries.

Vocabulary.

Venice- Венеция.

Tide- the rise and fall of the sea that happens twice every day (морской прилив, морской отлив).

Flood – a large amount of water covering an area that is usually dry (наводнение).

Reinforce- to make something stronger (усиливать).

Hamper- to prevent someone doing something easily (мешать, стеснять).

Reflux- flow back.

Deviate- to go in a different direction (отклоняться, отклониться).

Exceed- to be greater than a number or amount, or to go past an allowed limit (превышать).

Alignment- when two or more things are positioned in a straight line or parallel to each other (расстановка).

Gradient- how steep a slope is (подъем, склон).

Precipitation-water which falls from the clouds towards the ground, especially as rain or snow (осадки).

Exercise 1. Answer the questions.

1. What is acqua alta?
2. When does the phenomenon mainly occur? What are the reasons?
3. What are the three contributing factors tide levels largely depend on?

4. What celestial bodies can you name?
5. What is subsidence?

Exercise 2. Translate the following sentences using the key vocabulary above.

1. His behavior merely reinforced my dislike of him.
2. Fierce storms have been hampering rescue efforts to find more survivors.
3. The path follows the river closely, occasionally deviating round the trees.
4. Do you believe in the paranormal and other phenomena?

Read and translate the text.

Greenland – storage of Earth water

Stored water as part of the water cycle: the water cycle describes how water moves above, on, and through the Earth. But, in fact, much more water is "in storage" at any one time than is actually moving through the cycle. By storage, we mean water that is locked up in its present state for a relatively long period of time. Short-term storage might be days or weeks for water in a lake, but it could be thousands of years for deep groundwater storage or even longer for water at the bottom of an ice cap, such as in Greenland. In the grand scheme of things, this water is still part of the water cycle.

Ice caps around the world: the white areas in this map show glaciers and ice sheets around the world (reproduced from National Geographic WORLD, February 1977, no. 18, p. 6, with permission). The vast majority, almost 90 percent, of Earth's ice mass is in Antarctica, while the Greenland ice cap contains 10 percent of the total global ice mass. The Greenland ice cap is an interesting part of the water cycle. The ice cap became so large over time (about 600,000 cubic miles (mi^3) or 2.5 million cubic kilometers (km^3)) because more snow fell than melted. Over the millennia, as the snow got deeper, it compressed and became ice. The ice cap averages about 5,000 feet (1,500 meters) in thickness, but can be as thick as 14,000 feet (4,300 meters). The ice is so heavy that the land below it has been pressed down into the shape of a bowl. In many places, glaciers on Greenland reach to the sea, and one estimate is that as much as 125 ml^3 (517 km^3) of ice "calves" into the ocean each year—one of Greenland's contributions to the global water cycle. Ocean-bound icebergs travel with the currents, melting along the way. Some icebergs have been seen, in much smaller form, as far south as the island of Bermuda.

Ice and glaciers come and go. The climate, on a global scale, is always changing, although usually not at a rate fast enough for people to notice. There have been many warm periods, such as when the dinosaurs lived (about 100 million years ago) and many cold periods, such as the last ice age of about 18,000 years ago.

During the last ice age much of the northern hemisphere was covered in ice and glaciers, and, as this map from the University of Arizona shows, they covered nearly all of Canada, much of northern Asia and Europe, and extended well into the United States.

Glaciers are still around today; tens of thousands of them are in Alaska. Climatic factors still affect them today and during the current warmer climate, they can retreat in size at a rate easily measured on a yearly scale.

Ice caps influence the weather. Just because water in an ice cap or glacier is not moving does not mean that it does not have a direct effect on other aspects of the water cycle and the weather. Ice is very white, and since white reflects sunlight (and thus, heat), large ice fields can determine weather patterns. Air temperatures can be higher a mile above ice caps than at the surface, and wind patterns, which affect weather systems, can be dramatic around ice-covered landscapes.

Some glacier and ice cap facts:

- 1) Glacial ice covers 10-11 percent of all land.
- 2) According to the National Snow and Ice Data Center (NSIDC), if all glaciers melted today the seas would rise about 230 feet (70 meters).
- 3) During the last ice age (when glaciers covered more land area than today) the sea level was about 400 feet (122 meters) lower than it is today. At that time, glaciers covered almost one-third of the land.
- 4) During the last warm spell, 125,000 years ago, the seas were about 18 feet (5.5 meters) higher than they are today. About three million years ago the seas could have been up to 165 feet (50.3 meters) higher.
- 5) Largest surface area of any glacier in the contiguous United States: Emmons Glacier, Washington (4.3 square miles or 11 square kilometers).

Ice caps and global water distribution: even though the amount of water locked up in glaciers and ice caps is a small percentage of all water on (and in) the Earth, it represents a large percentage of the world's total freshwater. As these charts and the data table show, the amount of water locked up in ice and snow is only about 1.7 percent of all water on Earth, but the majority of total freshwater on Earth, about 68.7 percent, is held in ice caps and glaciers.

Vocabulary.

In storage- if things such as furniture are in storage, they are being kept safe in a special building while they are not needed (хранение, складирование).

Ice cap- a thick layer of ice that permanently covers an area of land (ледниковый покров, ледник).

Current- a movement of water, air or electricity, in a particular direction (течение).

Compress- to press something into a smaller space (сжимать, сдавливать).

Hemisphere- полушарие.

Glacier- ледник, глетчер.

Pattern-a particular way, in which something is done, organized or happens (пример, образец).

Freshwater- living in or containing water that is not salty (пресноводный).

Exercise 1. Answer the questions.

1. What does the water cycle describe?
2. Where is the vast majority, almost 90 percent, of Earth's ice mass?
3. How do ice caps influence the weather?
4. What is fresh water and where can it be found?
5. Why are ice caps and glaciers rather important?

Exercise 2. Decide if the following statements are true or false.

1. Water cycle describes how water moves above and through the Earth. T/F.
2. Water at the bottom of an ice cap is a part of the water cycle. T/F.
3. Ocean-bound icebergs travel with currents, melting along the way. T/F.
4. Glaciers are still around today, thousands of them are in Alaska. T/F.

Read and translate the text.

Waste problem

Definition of waste: waste, or rubbish, trash, junk, garbage, depending on the type of material or the regional terminology, is an unwanted or undesired material or substance. It may consist of the unwanted materials left over from a manufacturing process (industrial, commercial, mining or agricultural operations), or from community and household activities. The material may be discarded or accumulated, stored, or treated (physically, chemically, or biologically), prior to being discarded or recycled. It is also used to describe something we use inefficiently or inappropriately.

The problem: waste can be regarded as a human concept as there appears to be no such thing as waste in nature. The waste products created by a natural process or organism quickly becomes the raw products used by other processes and organisms. Recycling is predominant, therefore production and decomposition are well balanced and nutrient cycles continuously support the next cycles of production. This is the so-called circle of life and is a strategy clearly related to ensuring stability and sustainability in natural systems. On the other hand there are man-made systems which emphasize the economic value of materials and energy, and where production and consumption are the dominant economic activities. Such systems tend to be highly destructive of the environment as they require massive consumption of natural capital and energy, return the end product (waste) to the environment in a form that damages the environment and require more natural capital be consumed in order to feed the system. Where resources and space are

finite (the Earth isn't getting any bigger) this is ultimately not sustainable.

The presence of waste is an indication of overconsumption and that materials are not being used efficiently. This is carelessly reducing the Earth's capacity to supply new raw materials in the future. The capacity of the natural environment to absorb and process these materials is also under stress. Valuable resources in the form of matter and energy are lost during waste disposal, requiring that a greater burden be placed on ecosystems to provide these. The main problem is the sheer volume of waste being produced and how we deal with it.

Vocabulary.

Waste- unwanted matter or material of any type often that which is left after useful substances or parts have been removed (отходы, отбросы, мусор).

Discard- to throw something away or get rid of it because you no longer want or need it (выбрасывать).

Decompose- to decay or to cause something to decay (разлагаться).

Sustainable- causing little or no damage to the environment and therefore able to continue for a long time.

Absorb- to take something in, especially gradually (поглощать, впитывать).

Disposal- when you get rid of something, especially by throwing it away (устранение).

Exercise 1. Answer the questions.

1. Name other definitions of waste.
2. What may waste consist of?
3. Try to explain the problem of waste.
4. What systems tend to be highly destructive of the environment?
5. If there is waste, what does this fact indicate?

Exercise 2. Decide if the following statements are true or false.

1. Waste is an unwanted or undesired material or substance. T/F.
2. Waste may consist of the only unwanted materials. T/F.
3. There is no such thing as waste in nature. T/F.
4. The presence of waste is an indication of overconsumption. T/F.
5. Where resources and space are finite this is ultimately not sustainable. T/F.

Read and translate the text.

Biomass and aquatic system

Organisms use energy to maintain biological functions and to enable growth and reproduction. The organic matter produced by autotrophs and heterotrophs, in excess of what they need to sustain life, adds to the ecosystem's total biomass. The biomass in an ecosystem, it includes the mass of all living and dead organic matter. Production is the incremental increase in biomass produced by organisms over a period of time. Estimates of biomass and production are one measure that can be used to assess the health of aquatic ecosystems.

Primary production refers to the production of organic matter, such as body tissue, produced mainly by photosynthetic plants. It is expressed as a rate of biomass production - for example, the amount of wood produced each year.

Secondary production is the assimilation of organic material and building of tissue by heterotrophs, and may involve animals eating plants, animals eating other animals, or microorganisms decomposing dead organisms to obtain the resources (material, energy, nutrients) needed for producing biomass. Secondary production is also expressed as a rate of biomass production, such as the amount of meat produced by grazing cattle each year.

In a productive environment, living plant or animal tissue will accumulate over time. Biomass is the amount of this accumulated material at a given moment, while production is the rate of increase in the total biomass. In a river system, biomass may be lost by export (such as downstream transport of biomass), or gained by import from other systems (such as leaves falling into a stream).

Estimates of biomass and production can be applied at various spatial scales and to broad or narrow groups of organisms, such as all organisms in a lake, all fish in a lake, or all walleye in a lake. Production is often difficult to estimate, since it requires, among other things, accurate measures of biomass repeated at consistent intervals over a long period.

High biomass does not necessarily imply high production, and vice versa. For example, the biomass of plankton in a water body may be low, but because plankton grows and reproduces quickly, the plankton population may replace itself relatively quickly - it has a high rate of production.

Populations of large, long-lived fish represent a much greater biomass than the plankton; however, the production rate of large fish may be much lower. The rapidity with which living material can replace itself is measured by the production/biomass ratio. This ratio is high for plankton (high production, low biomass) and relatively low for fishes (low production, high biomass), and provides a better indication of energy transfer between trophic levels than instantaneous measures of biomass.

Vocabulary.

Biomass- dead plant and animal material suitable for using as fuel; the total amount of living things in a particular areas.

Incremental- in a series of amounts (прибыль, рост, прибавка, добавочный).

Photosynthesis- the process by which a plant uses the energy from the light of the sun to produce its own food (фотосинтез).

Spatial- relating to the position, area and size of things (пространственный).

Plankton- very small plants and animals which float on the surface of the sea and on which other sea animals feed (планктон).

Ratio- the relationship between two groups or amounts, which expresses how much bigger one is than the other (отношение, соотношение).

Instantaneous- happening immediately, without any delay (мгновенный, немедленный).

Trophic- relating to feeding and nutrition.

Exercise 1. Answer the questions.

1. What is biomass?
2. What is photosynthesis?
3. Explain the process of secondary production.
4. What is plankton?
5. What is biomass ratio?

Exercise 2. Decide if the following statements are true or false.

1. Organisms use energy to enable growth and reproduction. T/F.
2. The biomass includes the mass of all living and dead organic matter. T/F.
3. Production is the incremental increase in biomass. T/F.
4. Primary production refers to the production of organic matter. T/F.
5. Secondary production is the assimilation of organic material. T/F.
6. In a river system, biomass may be lost by export. T/F.
7. Production is often difficult to estimate. T/F.
8. High biomass does not necessarily imply high production. T/F.

Read and translate the text.

Problem of growth of population (demographic boom)

Demographic dividend refers to a period – usually 20 to 30 years – when fertility rates fall due to significant reductions in child and infant mortality rates. As women and families realize that fewer children will die during infancy or childhood, they will begin to have fewer children to reach their desired number of offspring, further reducing the proportion of non-productive dependents. This fall is often accompanied by an extension in average life expectancy that increases the portion

of the population that is in the working age-group. This cuts spending on dependents and spurs economic growth.

Demographic dividend, as defined by the United Nations Population Fund (UNFPA) means, “the economic growth potential that can result from shifts in a population’s age structure, mainly when the share of the working-age population (15 to 64) is larger than the non-working-age share of the population (14 and younger, and 65 and older).” In other words, it is “a boost in economic productivity that occurs when there are growing numbers of people in the workforce relative to the number of dependents.” UNFPA stated that, “A country with both increasing numbers of young people and declining fertility has the potential to reap a demographic dividend.

Due to the dividend between young and old, many argue that there is a great potential for economic gains, which has been termed the "demographic gift". In order for economic growth to occur the younger population must have access to quality education, adequate nutrition and health including access to sexual and reproductive health.

However, this drop in fertility rates is not immediate. The lag between produces a generational population bulge that surges through society. For a period of time this “bulge” is a burden on society and increases the dependency ratio. Eventually this group begins to enter the productive labor force. With fertility rates continue to fall and older generations having shorter life expectancies, the dependency ratio declines dramatically. This demographic shift initiates the demographic dividend. With fewer younger dependents, due to declining fertility and child mortality rates, and fewer older dependents, due to the older generations having shorter life expectancies, and the largest segment of the population of productive working age, the dependency ratio declines dramatically leading to the demographic dividend. Combined with effective public policies this time period of the demographic dividend can help facilitate more rapid economic growth and puts less strain on families. This is also a time period when many women enter the labor force for the first time. In many countries this time period has led to increasingly smaller families, rising income, and rising life expectancy rates. However, dramatic social changes can also occur during this time, such as increasing divorce rates, postponement of marriage, and single-person households.

Vocabulary.

Fertility- the quality of being able to produce young (плодородие, плодovitost').

Offspring- a person’s children (потомок, отпрыск).

Dependent- needing the support of something or someone in order to continue existing or operating (зависимый, находящийся на иждивении).

Demographics- the quantity and characteristics of the people who live in a particular area, especially in the relation to their age, how much money they have and what they spend it on.

Boost- to improve or increase something (увеличение, толчок, стимул).

Lag- to move or make process so slowly that you are behind other people or things (запаздывать, отставать).

Bulge- to stick out in a round shape (выступать, выдаваться).

Surge- a sudden and great increase (прилив, волна, импульс, вздыматься).

Expectancy- when you think that something exciting or pleasant is going to happen (ожидание, предвкушение).

Labor- practical work, especially that which involves physical effort (труд, работа, физический труд).

Divorce- when a marriage is ended by an official or legal process (развод).

Postpone- to delay an event and plan or decide that it should happen at a later date or time (отсрочивать, откладывать).

Exercise 1. Answer the questions.

1. Explain the peculiarities of the demographic dividend.
2. What does demographic dividend, as defined by the United Nations Population Fund (UNFPA) mean?
3. Explain, what is "demographic gift"?
4. What factor causes the drop in fertility rates?
5. What factors can help facilitate more rapid economic growth and puts less strain on families?

Exercise 2. Decide if the following statements are true or false.

1. Demographic dividend is a boost in economic productivity. T/F.
2. (UNFPA) is the United Nations Population Fund. T/F.
3. Demographic dividend refers to a period – usually 20 to 30 years. T/F.
4. The "demographic gift" is a great potential for economic gains. T/F.
5. When fertility rates fall it initiates the demographic dividend. T/F.

Read and translate the text.

Storing radioactive waste

For decades, the United States has produced nuclear energy and made weapons, creating nearly 100,000 metric tons of waste. So far, most of that waste has been stored mainly at the sites where it was created.

But those sites were supposed to be temporary solutions. And over the years, the U.S. government has spent billions researching potential permanent places to store nuclear waste.

The waste the government wants to store is from weapons and other U.S. Department of Defense activities, not from power plants. But if the test hole is successful, similar deep-drilled storage could be a solution to solving America's nuclear waste conundrum.

The government has a few caveats for the test site: it has to be away from oil and gas activity. It has to reach a layer of geology that would be impermeable and suitable for containing dangerous substances. And it has to have a history free of earthquakes.

The center conducts extensive research on oil and gas drilling and oil and gas brine disposal, and researches a number of other issues connected with energy production. The test hole they are planning to drill is similar in construction to oil and gas wells or injection wells where oil and gas wastewater gets dumped.

Injection wells for wastewater in Ohio are drilled about a half a mile to 1.5 miles deep.

The North Dakota test well will start out wide at the surface, with a steel-and-cement casing, then narrow as it gets deeper.

It was said that the geology 3 miles down is tight enough to contain nuclear waste, with no flowing water to carry it away or potentially bring it to the surface. The waste also will be placed in a container before it is buried.

The drill team will use bits the size of tree trunks to drill the test hole, bury a non-nuclear sample and see what happens.

Storage has been a conundrum for years. Scientists and policy makers have even considered burying waste deep in the ocean or even in space.

For years, the federal government had planned to store nuclear waste in Yucca Mountain, near a nuclear test site in Nevada. But in 2010, the Department of Energy pulled its application for the site, which few seemed to support.

Since then, the federal government has been searching for a solution.

Vocabulary.

Radioactivity – the emission of ionizing radiation or particles caused by the spontaneous disintegration of atomic nuclei (радиоактивность).

Radiation – the emission of energy as electromagnetic waves or as moving subatomic particles, especially high-energy particles which causes ionization (радиация).

Hazard – danger or risk (риск, опасность).

Waste- unwanted matter or material of any type often that which is left after useful substances or parts have been removed (отходы, отбросы, мусор).

Nuclear – denoting, possessing, or involving weapons using nuclear energy (ядерный).

Conundrum- a problem that is difficult to deal with (загадка, головоломка).

Caveat- a warning to consider something before acting further, or a statement which limits a more general statement (предостережение).

Impermeable- not allowing liquid or gas to go through (непроницаемый).

Exercise 1. Answer the questions.

1. Why did the United States create nearly 100,000 metric tons of waste?
2. What facts are rather important for the test sites?
3. Explain, what similarities does the test hole they are planning to drill have?
4. What are the restrictions to bury the waste?
5. What places in the USA were planned as potential places for storing the radioactive waste?

Exercise 2. Decide if the following statements are true or false.

1. The USA has spent much researching places to store nuclear waste. T/F.
2. The waste the government wants to store is from weapons. T/F.
3. The test hole they plan to drill is similar to oil and gas wells. T/F.
4. The waste also will be placed in a container before it is buried. T/F.
5. The drill team will bury a non-nuclear sample and see what happens. T/F.

Read and translate the text.

Ozone holes in Antarctica

The stratospheric ozone layer protects life on Earth by absorbing ultraviolet light, which damages DNA in plants and animals (including humans) and leads to skin cancer. But in the early 1980s, through a combination of ground-based and satellite measurements, scientists began to realize that Earth's natural sunscreen was thinning dramatically over the South Pole each spring. This large, thin spot in the ozone layer came to be known as the ozone hole.

This series of images shows the size and shape of the ozone hole each year from 1979 through 2016 (no data are available for 1995). The measurements were made from 1979–2003 by NASA's total ozone mapping spectrometer (TOMS) instruments, and from 2004–present by the royal Netherlands meteorological institute's ozone monitoring instrument (OMI) that flies on NASA's Aura satellite. Purple and dark blue areas are part of the ozone hole.

As the images show, the word hole isn't literal; no place is empty of ozone. Scientists use the word hole as a metaphor for the area in which ozone concentrations drop below the historical threshold of 220 Dobson units. Using this metaphor, they can describe the hole's size and depth. These maps show the state of

the ozone hole each year on the day of maximum depth—the day the lowest ozone concentrations were measured.

The series begins in 1979. The maximum depth of the hole that year was 194 Dobson units (DU)—not far below the historical low. For several years, the minimum concentrations stayed in the 1980 years, but beginning in 1983, the minimums got deeper rapidly: 173 DU in 1982, 154 in 1983, 124 in 1985. In 1991, a new threshold was passed; ozone concentration fell below 100 DU for the first time. Since then, concentrations below 100 have been common. The deepest ozone hole occurred in 1994, when concentrations fell to just 73 DU on September 30.

Records in depth and size haven't occurred during the same years (the largest ozone hole occurred in 2006), but the long-term trend in both characteristics is consistent: from 1980 through the early 1990 years, the hole rapidly grew in size and depth. Since the mid-1990 years, area and depth have roughly stabilized (see the Ozone Hole Watch website for annual averages). Year-to-year variations in area and depth are caused by variations in stratospheric temperature and circulation. Colder conditions result in a larger area and lower ozone values in the center of the hole.

An uneven seam in the contours of the data marks the location of the International Date Line. Ozone data are measured by polar-orbiting satellites that collect observations in a series of swaths over the course of the day; the passes are generally separated by about 90 minutes. Stratospheric circulation slowly shifts the contours of the ozone hole over the course of the day (like winds shift the location of clouds). The contours move little from any one swath to the next, but by the end of the day, the cumulative movement is apparent at the date line.

The ozone hole opened the world's eyes to the global effects of human activity on the atmosphere. It turned out that chlorofluorocarbons (CFCs) - long-lived chemicals that had been used in refrigerators and aerosol sprays since the 1930 years - had a dark side. In the layer of the atmosphere closest to Earth (the troposphere), CFCs circulated for decades without degrading or reacting with other chemicals. When they reached the stratosphere, however, their behavior changed. In the upper stratosphere (beyond the protection of the ozone layer), ultraviolet light caused CFCs to break apart, releasing chlorine, a very reactive atom that repeatedly catalyzes ozone destruction.

The global recognition of CFCs' destructive potential led to the 1989 Montreal protocol banning of the production of ozone-depleting chemicals. Scientists estimate that about 80 percent of the chlorine (and bromine, which has a similar ozone-depleting effect) in the stratosphere over Antarctica today is from human, not natural, sources. Models suggest that the concentration of chlorine and other ozone-depleting substances in the stratosphere will not return to pre-1980 levels until the middle decades of this century. These same models predict that the Antarctic ozone layer will recover around 2040.

Vocabulary.

The ozone layer- a layer of air high above the Earth, which contains a lot of ozone, and which prevents harmful ultraviolet light from the sun from reaching the Earth (озонный слой).

The stratosphere- the layer of gases surrounding the Earth at a height of between 15 and 50 kilometers, which is not affected by the weather and in which the temperature increases with height (стратосфера).

DNA- deoxyribonucleic acid: the chemical at the center of the cells of living things, which controls the structure and purpose of each cell and carries the GENETIC information during reproduction (ДНК дезоксирибонуклеиновая кислота).

Seam- a long thin layer of a substance such as coal which has formed between layers of other rocks (шов, пласт).

Swath- a long strip or large area especially of land (прокос).

CFCs- chlorofluorocarbon: a gas used in fridges and in the past, in AEROSOLS (= a metal container in which liquids are kept under pressure and forced out in drops) (хлорированные фторуглероды).

Catalysis- the process of making a chemical reaction happen more quickly by using a catalyst (катализ).

Ozone-friendly- describes a product which does not produce gases that are harmful to the OZONE LAYER.

Depletion- reduction (истощение, истощивание).

Chlorine- хлор.

Bromine- бром.

Exercise 1. Answer the questions.

1. Describe the functions of the stratospheric ozone layer.
2. What do scientists mean using the word ozone hole?
3. Explain the word stratosphere.
4. What is DNA?
5. Why CFCs are so dangerous?

Exercise 2. Decide if the following statements are true or false.

1. The stratospheric ozone layer protects life on Earth. T/F.
2. Ultraviolet light damages DNA in plants and humans. T/F.
3. Scientists realized that Earth's sunscreen was thin over the South Pole. T/F.
4. Ozone data are measured by polar-orbiting satellites. T/F.
5. The Antarctic ozone layer will recover around 2040. T/F.

Read and translate the text.

Mirage in desert

Search for water in the desert is not new. A trick of the light makes it appear as though water is present while in reality it is not. This is called mirage, otherwise called Fata Morgana.

Suppose I think I see water in the desert when there is not water. This is an illusion. Water exists, but not in the mirage. Similarly, the material varieties we see - the varieties of enjoyment - are like that mirage. We, the living entities, are meant for enjoyment, but we are seeking enjoyment in a false place - in an illusion. We are like the desert animals that run after water in a mirage and eventually die of thirst. They cannot relieve their thirst with such illusory water. Similarly, we are trying to manufacture many things to satisfy our thirst for enjoyment, but we are being baffled at every turn because material existence is an illusion. Therefore real intelligence means to inquire, "Where is the reality? Where is the eternal substance behind the illusion?" if we can find that out, we can experience real enjoyment.

Why does a mirage happen in the desert? It is due to the phenomena of 'total internal reflection'. On a very hot day in a desert, the air just in contact with sand is hotter than the air above it due to the high temperature of sand. This causes the refractive index of the air in contact with the sand to be lower than that of the air above it. Thus, sunlight passes through a medium of higher refractive index to that of lower refractive index.

At a particular angle, the angle of incidence becomes greater than the critical angle and all the conditions of total internal reflections are fulfilled. This causes the sunlight to reflect from the interface of both the air columns itself without touching the sand. Hence, it appears as a watery surface from far off distances, also known as mirage.

While going nearer to the apparent water, the angle of incidence of sunlight decreases and becomes less than the critical angle. So, total internal reflection does not occur for that point at that angle and hence the mirage disappears. Mirage is thus visible only when the distance from a point is greater than a critical distance determined by the refractive index of the air columns to satisfy the condition of critical angle for total internal reflection to occur.

Vocabulary.

Mirage- an image produced by very hot air, of something which seems to be far away but does not really exist; a hope or wish that has no chance of being achieved (мираж).

Entity- something which exists apart from other things, having its own independent existence (существо, организм, организация).

Illusion- an idea or belief which is not true; something that is not really what it seems to be (иллюзия, обман).

Variety- a different type of something (разнообразие, множество, разновидность).

Refract- when water or glass, etc. refracts light or sand, etc. it causes it to change direction or to separate when it travels through it (преломлять).

Desert- пустыня.

Incidence- an event or the rate at which something happens (падение, наклон. угол падения).

Internal- existing or happening inside a person, object, organization, place or country (внутренний).

Reflection- the image of something in a mirror or on any reflective surface (отражение).

Exercise 1. Answer the questions.

1. What do we call mirage?
2. What is illusion?
3. Why does a mirage happen in the desert?
4. Could you explain the phenomenon from the scientific point of view?
5. When is mirage visible?

Exercise 2. Translate the following sentences using the key words from the vocabulary above.

1. We had to cross a large area of arid, featureless desert.
2. A large mirror in a room can create the illusion of space.
3. The impression of calm in the office is just an illusion.
4. He regarded the north of the country as a separate cultural entity.
5. The glass prism refracted the white light into the colors of the rainbow.
6. This medicine is for external use only and should not be taken internally.

Read and translate the text.

Climate changes influence desert

Desert plants go wild during wet years when treated to excess carbon dioxide, researchers say. The finding backs up climate change models, which predict that rising levels of atmospheric CO₂ will disrupt the ecology of sensitive desert ecosystems. Experts fear that the change will favor invasive plants given to triggering wildfires.

Plentiful CO₂ helps plants use water more efficiently, and atmospheric levels of CO₂ are expected to double, relative to preindustrial times, by 2050. Global-warming researchers predict that such massive increases will eventually transform desert ecosystems. The boom in plant growth is expected to upset delicately

balanced desert ecosystems--changing the nutrient cycle, fire cycle, and distribution of water.

A research team led by ecologist Stanley Smith of the University of Nevada, Las Vegas, decided to check. They enriched levels of CO₂ above three 23-meter-diameter plots by about 50%. Six similar plots served as controls. During the lush 1998 El Niño growing season and the subsequent drought of 1999, the researchers measured plant size, density, and seed production on the plots. Carbon dioxide didn't change plant growth much during the drought, but it did during the wet year. All plants in the CO₂ plots grew bigger and produced more seeds than those in control plots. However, some plants took more advantage of the situation than others; invasive species such as cheat grass doubled their density in wet, high-CO₂ conditions compared to native species such as fescue and peppergrass, the researchers report in the 2 November issue of Nature.

Long-term elevated CO₂ levels could give exotic species a boost, Smith says, and extra plant matter means more fuel for fires. The effect could magnify over time, he warns, as exotic species recover faster after a blaze, building up fuel quickly for the next fire.

Vocabulary.

Desert- пустыня.

Carbon dioxide- the gas formed when carbon is burned, or when people or animals breathe out (двуокись углерода, углекислота, углекислый газ).

Ecology – the branch of biology that deals with the relations of organisms to one another and to their physical surroundings.

Sustainable – able to be maintained at a certain rate or level; Ecology (especially of development, exploitation, or agriculture) conserving an ecological balance by avoiding depletion of natural resources.

Ecosystem – a biological community of interacting organisms and their physical environment.

Humid – marked by a relatively high level of water vapor in the atmosphere (влажный).

Disrupt- to prevent something, especially a system, process or event, from continuing as usual or as expected (сорвать, прервать, нарушать).

Invasive- moving into all areas of something and difficult to stop.

Lush- a lush area has a lot of green, healthy plants, grass and trees (пышный, роскошный).

Drought- засуха.

Exercise 1. Answer the questions.

1. What happens to desert plants during wet years?
2. What do global-warming researchers predict?
3. What can the boom in plant growth cause?

4. What was the result of scientific research?
5. What typical desert plants could you name?

Exercise 2. Decide if the following statements are true or false.

1. Desert plants go wild during wet years. T/F.
2. Rising levels of CO₂ will disrupt the ecology of desert ecosystems. T/F.
3. The change will favor invasive plants given to triggering wildfires. T/F.
4. The boom in plant growth can upset balanced desert ecosystems. T/F.
5. Extra plant matter means more fuel for fires. T/F.
6. Exotic species recover faster, building up fuel for the next fire. T/F.

Read and translate the text.

Environmental engineer

Environmental engineering is the branch of engineering concerned with the application of scientific and engineering principles for protection of human populations from the effects of adverse environmental factors; protection of environments, both local and global, from the potentially deleterious effects of natural and human activities; and improvement of environmental quality.

Environmental engineering can also be described as a branch of applied science and technology that addresses the issues of energy preservation, production asset and control of waste from human and animal activities. Furthermore, it is concerned with finding plausible solutions in the field of public health, such as waterborne diseases, implementing laws which promote adequate sanitation in urban, rural and recreational areas. It involves waste water management, air pollution control, recycling, waste disposal, radiation protection, industrial hygiene, environmental sustainability, public health and environmental engineering law. It also includes studies on the environmental impact of proposed construction projects.

Environmental engineers study the effect of technological advances on the environment. To do so, they conduct studies on hazardous-waste management to evaluate the significance of such hazards, they advise on treatment and containment, and develop regulations to prevent mishaps. Environmental engineers design municipal water supply and industrial wastewater treatment systems. They address local and worldwide environmental issues such as the effects of acid rain, global warming, ozone depletion, water pollution and air pollution from automobile exhausts and industrial sources.

At many universities environmental engineering programs are offered at either the department of civil engineering or the department of chemical engineering at engineering faculties. Environmental "civil" engineers focus on hydrology, water resources management, bioremediation, and water treatment plant

design. Environmental "chemical" engineers, on the other hand, focus on environmental chemistry, advanced air and water treatment technologies and separation processes.

Vocabulary.

Environment – the surroundings or conditions in which a person, animal or plant lives or operates (окружающая среда).

Adverse-having a negative or harmful effect on something (неблагоприятный).

Asset - a useful or valuable quality, skill or person (ценность).

Waste - unwanted matter or material of any type often that which is left after useful substances or parts have been removed (отходы, отбросы, мусор).

Containment- when something or someone harmful is controlled and limited (сдерживание).

Exercise 1. Answer the questions.

1. Could you explain the term 'environmental engineering'?
2. What should environmental engineer do?
3. What do environmental engineers study?
4. How do they carry out their work?
5. What is the difference between environmental "civil" engineers and environmental "chemical" engineers?

Exercise 2. Translate the following sentences using the key vocabulary above.

1. People are becoming far more aware of environmental issues.
2. Chemicals are banned because of the damaging effect on the environment.
3. We must protect the environment from pollution.
4. The match has been cancelled due to adverse weather conditions.
5. Britain produces 20 million tones of household waste each year.
6. He opposes any kind of nuclear waste being dumped at sea.
7. The Japanese recycle more than half of their waste paper.

Read and translate the text.

Urbanization

Urbanization is a population shift from rural to urban areas, "the gradual increase in the proportion of people living in urban areas", and the ways in which each society adapts to the change. It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working in cities. The United Nations projected that half of the world's population would live in

urban areas at the end of 2008. It is predicted that by 2050 about 64% of the developing world and 86% of the developed world will be urbanized. That is equivalent to approximately 3 billion urbanites by 2050, much of which will occur in Africa and Asia. Notably, the United Nations has also recently projected that nearly all global population growth from 2016 to 2030 will be absorbed by cities, about 1.1 billion new urbanites over the next 14 years.

Urbanization can be seen as a specific condition at a set time (e.g. the proportion of total population or area in cities or towns) or as an increase in that condition over time. So urbanization can be quantified either in terms of, say, the level of urban development relative to the overall population, or as the rate at which the urban proportion of the population is increasing. Urbanization creates enormous social, economic and environmental changes, which provide an opportunity for sustainability with the “potential to use resources more efficiently, to create more sustainable land use and to protect the biodiversity of natural ecosystems.”

Urbanization is not merely a modern phenomenon, but a rapid and historic transformation of human social roots on a global scale, whereby predominantly rural culture is being rapidly replaced by predominantly urban culture. The first major change in settlement patterns was the accumulation of hunter-gatherers into villages many thousand years ago. Village culture is characterized by common bloodlines, intimate relationships, and communal behavior whereas urban culture is characterized by distant bloodlines, unfamiliar relations, and competitive behavior. This unprecedented movement of people is forecast to continue and intensify during the next few decades, mushrooming cities to sizes unthinkable only a century ago.

Vocabulary.

Urbanization- the process by which more and more people leave the countryside to live in cities (урбанизация, рост городов).

Population- all the people living in a particular country, area or place (население, жители).

Sustainable- causing little or no damage to the environment and therefore able to continue for a long time.

Biodiversity- the number and types of plant and animal species that exist in a particular environmental area or in the world generally, or the problem of protecting this (биологическое разнообразие).

Ecosystem – a biological community of interacting organisms and their physical environment.

Rural- in, of or like the countryside (сельский).

Predominantly- mostly or mainly (преобладающий, восходящий, доминирующий).

Urban- of or in a city or town (городской).

Mushroom- increase very quickly (быстро распространяться, расти как грибы под дождем).

Exercise 1. Answer the questions.

1. How do you understand the term "urbanization"?
2. What is the difference between urban and rural?
3. What will happen in the year 2030?
4. Are there any positive results in urbanization?
5. Village culture and urban culture, are they different?

Exercise 2. Translate the following sentences using the key vocabulary above.

1. The UK is a highly urbanized country.
2. Traffic noise, pollution - how can people survive in the urban jungle?
3. The country is facing a population explosion.
4. The dolphin population has been decimated by tuna fishing.
5. That meeting was to promote sustainable development in all countries.
6. Pollution can have disastrous effects on the balanced ecosystem.
7. The area is still very rural and undeveloped.
8. The number of computers in schools has mushroomed in recent years.
9. For this recipe choose mushrooms with large caps (=top parts).

Read and translate the text.

The Earth structure and spheres

Everything in Earth's system can be placed into one of four major subsystems: land, water, living things, or air. These four subsystems are called "spheres." Specifically, they are the "lithosphere" (land), "hydrosphere" (water), "biosphere" (living things), and "atmosphere" (air). Each of these four spheres can be further divided into sub-spheres. To keep things simple in this module, there will be no distinction among the sub-spheres of any of the four major spheres.

Lithosphere: the lithosphere contains all of the cold, hard solid land of the planet's crust (surface), the semi-solid land underneath the crust, and the liquid land near the center of the planet. The surface of the lithosphere is very uneven. There are high mountain ranges like the Rockies and Andes, huge plains or flat areas like those in Texas, Iowa, and Brazil, and deep valleys along the ocean floor.

The solid, semi-solid, and liquid land of the lithosphere form layers that are physically and chemically different. If someone were to cut through Earth to its center, these layers would be revealed like the layers of an onion. The outermost layer of the lithosphere consists of loose soil rich in nutrients, oxygen, and silicon. Beneath that layer lies a very thin, solid crust of oxygen and silicon. Next is a thick,

semi-solid mantle of oxygen, silicon, iron, and magnesium. Below that is a liquid outer core of nickel and iron. At the center of Earth is a solid inner core of nickel and iron.

Hydrosphere: the hydrosphere contains all the solid, liquid, and gaseous water of the planet. It ranges from 10 to 20 kilometers in thickness. The hydrosphere extends from Earth's surface downward several kilometers into the lithosphere and upward about 12 kilometers into the atmosphere.

A small portion of the water in the hydrosphere is fresh (non-salty). This water flows as precipitation from the atmosphere down to Earth's surface, as rivers and streams along Earth's surface, and as groundwater beneath Earth's surface. Most of Earth's fresh water, however, is frozen.

Ninety-seven percent of Earth's water is salty. The salty water collects in deep valleys along Earth's surface. These large collections of salty water are referred to as oceans.

Biosphere: the biosphere contains all the planet's living things. This sphere includes all of the microorganisms, plants, and animals of Earth. Within the biosphere, living things form ecological communities based on the physical surroundings of an area. These communities are referred to as biomes. Deserts, grasslands, and tropical rainforests are three of the many types of biomes that exist within the biosphere.

It is impossible to detect from space each individual organism within the biosphere. However, biomes can be seen from space.

Atmosphere: the atmosphere contains all the air in Earth's system. It extends from less than 1 m below the planet's surface to more than 10,000 km above the planet's surface. The upper portion of the atmosphere protects the organisms of the biosphere from the sun's ultraviolet radiation. It also absorbs and emits heat. When air temperature in the lower portion of this sphere changes, weather occurs. As air in the lower atmosphere is heated or cooled, it moves around the planet. The result can be as simple as a breeze or as complex as a tornado.

Vocabulary.

Outermost- at the greatest distance from the centre (самый дальний).

Precipitation- water which falls from the clouds towards the ground, especially as rain or snow (осадки).

Community- a group of animals or plants that live or grow together (община, группа).

Biome- a region of the Earth's surface and the particular combination of climate, plants and animals that are found in it.

Breeze- light and pleasant wind (ветерок, бриз).

Tornado- a strong dangerous wind which forms itself into an upside-down spinning cone and is able to destroy buildings as it moves across the ground (торнадо).

Exercise 1. Answer the questions.

1. What is a sphere or a subsystem?
2. How many major subsystems can you name?
3. What is lithosphere?
4. What is hydrosphere?
5. What is biosphere?
6. What is atmosphere?

Exercise 2. Decide if the following statements are true or false.

1. There are four major subsystems: land, water, living things, or air. T/F.
2. These four subsystems are called "spheres." T/F.
3. They are the "lithosphere" (land) and "hydrosphere" (water). T/F.
4. The surface of the lithosphere is very uneven. T/F.
5. The hydrosphere contains the solid and gaseous water of the planet. T/F.
6. A small portion of the water in the hydrosphere is fresh. T/F.
7. Most of Earth's fresh water, however, is frozen. T/F.
8. Ninety-seven percent of Earth's water is salty. T/F.
9. The biosphere contains all the planet's living things. T/F.
10. Biomes can't be seen from space. T/F.
11. The atmosphere contains all the air in Earth's system. T/F.

Read and translate the text.

Landforms

A landform is a natural feature of the solid surface of the Earth or other planetary body. Landforms together make up a given terrain, and their arrangement in the landscape is known as topography. Typical landforms include hills, mountains, plateaus, canyons, valleys, as well as shoreline features such as bays, peninsulas, and seas, including submerged features such as mid-ocean ridges, volcanoes, and the great ocean basins

Landforms are categorized by characteristic physical attributes such as elevation, slope, orientation, stratification, rock exposure and soil type. Gross physical features or landforms include intuitive elements such as berms, mounds, hills, ridges, cliffs, valleys, rivers, peninsulas and numerous other structural and size-scaled (i.e. ponds versus lakes, hills versus mountains) elements including various kinds of inland and oceanic water bodies and sub-surface features.

Some generic landform elements include: pits, peaks, channels, ridges, passes, pools and plains.

Vocabulary.

Terrain-an area of land, when considering its natural features (местность).

Landscape- a large area of countryside, especially in relation to its appearance (пейзаж, ландшафт).

Topography- the physical appearance of the natural features of an area of land, especially the shape of its surface (топография, рельеф).

Slope- наклон, склон, уклон.

Mound- насыпь, курган.

Hill- холм.

Ridge-горный хребет, кряж.

Cliff- утес, скала.

Peninsula- полуостров.

Pit- котлован, карьер.

Pass- ущелье, перевал.

Pool- пруд, лужа, заводь.

Plain- равнина.

Exercise 1. Answer the questions.

1. What is a landform?
2. What is terrain?
3. What is topography?
4. How landforms are categorized?

Exercise 2. Decide if the following statements are true or false.

1. A landform is the solid surface of the Earth or other planetary body. T/F.
2. Typical landforms include hills, mountains and valleys. T/F.
3. Landforms are categorized by characteristic physical attributes. T/F.
4. Some generic landform elements include: pits, peaks and channels. T/F.

Read and translate the text.

Climatic zones

Climate zones are areas with distinct climates, which occur in east-west direction around the Earth, and can be classified using different climatic parameters. Generally, climate zones are belt-shaped and circular around the Poles. In some areas, climate zones can be interrupted by mountains or oceans.

The solar radiation reaches the ground on different parts of the Earth with different angles. On the equator, the sunlight reaches the ground almost perpendicularly, whilst at the poles the angle of the Sun is lower or even under the horizon during the polar night.

Throughout the seasons, the position of the Sun to the Earth and thus the angle of incidence of the sunlight also change. The angle of the Sun at noon varies from perpendicular (90°) within the tropics up to horizontal (0° = Sun does not or only partially appear on the horizon) within the polar circle. Thus, the sunlight warms up the Earth around the equator much more strongly than at the poles. Due to temperature differences caused by the differences in radiation, recurring climatic conditions develop, such as winter and summer. These conditions are characterized by a certain amount of precipitation in summer or a certain average air temperature.

Different climatic conditions, which arise regularly in certain areas, are summarized and described in the classification below.

Classification: there are 4 major climate zones.

Tropical zone from 0° – 23.5° (between the tropics). In the regions between the equator and the tropics (equatorial region), the solar radiation reaches the ground nearly vertically at noontime during almost the entire year. Thereby, it is very warm in these regions. Through high temperatures, more water evaporates and the air is often moist. The resulting frequent and dense cloud cover reduces the effect of solar radiation on ground temperature.

Subtropics from 23.5° – 40° . The subtropics receive the highest radiation in summer, since the Sun's angle at noon is almost vertical to the Earth, whilst the cloud cover is relatively thin. These regions receive less moisture (see trade winds), what increases the effect of radiation. Therefore, most of the deserts in the world are situated in this zone. In winter, the radiation in these regions decreases significantly, and it can temporarily be very cool and moist.

Temperate zone from 40° – 60° . In the temperate zone, the solar radiation arrives with a smaller angle, and the average temperatures here are much cooler than in the subtropics. The seasons and day length differ significantly in the course of a year. The climate is characterized by less frequent extremes, a more regular distribution of the precipitation over the year and a longer vegetation period - therefore the name "temperate".

Cold zone from 60° – 90° . The polar areas between 60° latitude and the poles receive less heat through solar radiation, since the Sun has a very flat angle toward the ground. Because of the changes of the Earth axis angle to the Sun, the day length varies most in this zone. In the summer, polar days occur. Vegetation is only possible during a few months per year and even then is often sparse. The conditions for life in these regions are very hard.

The characteristics of the climate zones change with great altitude differences within a small area, like in mountain areas, since temperatures decrease rapidly with altitude, changing the climate compared to valleys.

Vocabulary.

Radiation – the emission of energy as electromagnetic waves or as moving subatomic particles, especially high-energy particles which causes ionization (радиация).

Incidence- an event or the rate at which something happens (падение, наклон. угол падения).

Angle- угол.

Moist- slightly wet, especially in a good way (влажный, сырой).

Moisture- a liquid such as water in the form of very small drops, either in the air, in a substance, or on a surface (влажность, влага).

Significantly- in a way that is easy to see or by a large amount (значительно, существенно).

Temperate- (of weather conditions) neither very hot nor very cold (умеренный).

Altitude- height above sea level (высота над уровнем моря).

Exercise 1. Answer the questions.

1. What are climatic zones?
2. What is special about the solar radiation?
3. What can you say about the position of the Sun to the Earth and thus the angle of incidence of the sunlight, do they also change?
4. How many climate zones are there?
5. What can you say about the tropical zone?
6. What is special about subtropics?
7. How does the temperate zone differ from the rest? Is that the zone where we live?
8. Where is the position of the cold zone? And what is particular about it?
9. Can the characteristics of the climate zones change with great altitude differences within a small area?

Exercise 2. Decide if the following statements are true or false.

1. Climate zones can be classified using different climatic parameters. T/F.
2. Climate zones are belt-shaped and circular around the Poles. T/F.
3. The solar radiation reaches the ground with different angles. T/F.
4. All the seasons, the angle of incidence of the sunlight also changes. T/F.
5. There are 4 major climate zones. T/F.

Read and translate the text.

High-tech trash

The Digital Age was expected to usher in an era of clean production, an alternative to smokestack industries and their pollutants. But in this penetrating

analysis of high tech manufacture and disposal, digital may be sleek, but it's anything but clean. Deep within every electronic device lie toxic materials that make up the bits and bytes, a complex thicket of lead, mercury, cadmium, plastics, and a host of other often harmful ingredients.

High Tech Trash is a wake-up call to the importance of the e-waste issue and the health hazards involved. Americans alone own more than two billion pieces of high tech electronics and discard five to seven million tons each year. As a result, electronic waste already makes up more than two-thirds of the heavy metals and 40 percent of the lead found in our landfills. But the problem goes far beyond American shores, most tragically to the cities in China and India where shiploads of discarded electronics arrive daily. There, they are "recycled"-picked apart by hand, exposing thousands of workers and community residents to toxics.

"This is a story in which we all play a part, whether we know it or not. If you sit at a desk in an office, talk to friends on your cell phone, watch television, listen to music on headphones, whether you are a child in Guangdong, or a native of the Arctic, you are part of this story".

The answers lie in changing how we design, manufacture, and dispose of high tech electronics. Europe has led the way in regulating materials used in electronic devices and in e-waste recycling. But in the United States many have yet to recognize the persistent human health and environmental effects of the toxics in high tech devices.

Vocabulary.

High-tech- (hi-tech) using the most advanced and developed machines and methods; very modern looking or made with modern materials (высокотехнологичный).

Trash- rubbish (мусор, хлам).

Usher something in- to be at the start of a new period, especially when important changes or new things happen, or to cause important changes to start happening (вводить, возвещать).

Smokestack industry- traditional industries that produce large machines or materials used in other industries and create a lot of pollution in doing so (заводы засоряющие атмосферу).

Sleek- smooth, shiny and lying close to the body, and therefore looking well cared for; not untidy and with no parts sticking out (гладкий, прилизанный).

Cadmium- кадмий.

Persistent- lasting for a long time or difficult to get rid of (упорный, устойчивый).

Exercise 1. Answer the questions.

1. What do you understand by the term 'high-tech trash'?
2. What was The Digital Age expected to usher?

3. Are digital products clean?
4. What materials does any electronic device consist of?
5. What country owns more than two billion pieces of high tech electronics and discards five to seven million tons each year?
6. In what countries of the world do shiploads of discarded electronics arrive daily?
7. And how are these shiploads recycled in those countries?
8. Are there any ways to solve this serious problem?
9. What countries have led the way in regulating materials used in electronic devices and in e-waste recycling?

Exercise 2. Decide if the following statements are true or false.

1. The Digital Age was expected to usher in an era of clean production. T/F.
2. Deep within every electronic device are toxic materials. T/F.
3. High Tech Trash threatens our health. T/F.
4. Electronic waste makes up more than two-thirds of the heavy metals. T/F.
5. 40 percent of the lead was found in our landfills. T/F.
6. But the problem goes to the cities in China and India. T/F.
7. To solve this problem we have to change how we design. T/F.

Read and translate the text.

Floods on the rivers in Almaty

Many glacial lakes have a distinct turquoise or greenish hue caused by rock flour suspended in the water. Although this can leave an impression of serenity and beauty, some of these picturesque lakes pose significant risks to people in mountainous regions. Residents of Almaty, the largest city in Kazakhstan, were reminded of this in July 2015 when a warm spell triggered a destructive glacial lake outburst flood along the Kargalinka River.

Warm weather in 2015 has increased the flow of melt water from Kargalinka Glacier into nearby melt ponds. On July 23, 2015, the moraine holding back water in a melt pond failed, sending water, mud, boulders, and other debris rushing down the river toward Almaty. While a dam in the outskirts of the city rebuffed some of the water, the flash flood swamped several neighborhoods, injured 76 people, damaged 127 homes, and forced about 1,000 people to evacuate. Towns on the outskirts of the city, including Algabas and Alatue, were the most severely affected.

The Operational Land Imager (OLI) on Landsat 8 captured a view of the flood aftermath on July 27, 2015. If we turn on the image comparison tool to see how the same area looked 16 days earlier: in the more recent image, the melt pond has emptied and a fresh layer of fresh and debris lines the river.

The Kargalinka is not the only river in the area that faces the threat of glacial lake outburst floods. In 2012, an analysis of satellite imagery of the northern Tian Shan pointed out 47 potentially dangerous lakes in the region.

Meanwhile, the same heat wave that triggered the Almaty flood has caused similar outburst floods elsewhere. Some 300,000 people were stranded and three people were killed by a glacial lake outburst flood in the Khyber Pakhtunkhwa province in Pakistan, according to news reports.

Vocabulary.

Glacial- made or left by a glacier (ледовый, ледяной).

Turquoise- a bluish green precious stone which is often used in jewelry; bluish green in color (бирюза, бирюзовый).

Suspend- if small pieces of solid material are suspended in a gas or a liquid, they hang or float in the gas or liquid (подвешивать, повиснуть).

Outburst flood- наводнять.

Melt water- тающая вода.

Melt ponds- пруды с тающей водой.

Moraine- морена.

The outskirts- the areas that form the edge of a town or city (окраина).

Aftermath- the period which follows an unpleasant event or accident, and the effects which it causes (последствия).

Debris- broken or torn pieces of something larger (осколки, обломки).

Stranded- сесть на мель, застрять.

Exercise 1. Answer the questions.

1. What do many glacial lakes have in common?
2. What is the cause of this greenish hue in glacial lakes?
3. Do such lakes look beautiful and picturesque?
4. Do some of these picturesque lakes pose significant risks to people in mountainous regions?
5. What was the cause of the flood along the Kargalinka River?
6. Was the damage great?
7. How could specialists compare the change of the area look?
8. Are there others potentially dangerous lakes in the region?

Exercise 2. Decide if the following statements are true or false.

1. Many glacial lakes have a distinct turquoise or greenish hue. T/F.
2. These picturesque lakes pose risks to people in mountainous regions. T/F.
3. OLI is the Operational Land Imager. T/F.
4. There are 47 dangerous lakes in the region of the northern Tian Shan. T/F.
5. The same heat wave has caused similar outburst floods elsewhere.

Read and translate the text.

Bermuda triangle

The Bermuda triangle, also known as the Devil's triangle, is a loosely-defined region in the western part of the North Atlantic Ocean, where a number of aircraft and ships are said to have disappeared under mysterious circumstances. Most reputable sources dismiss the idea that there is any mystery. The vicinity of the Bermuda triangle is one of the most heavily traveled shipping lanes in the world, with ships frequently crossing through it for ports in the Americas, Europe, and the Caribbean islands. Cruise ships and pleasure craft regularly sail through the region, and commercial and private aircraft routinely fly over it.

Popular culture has attributed various disappearances to the paranormal or activity by extraterrestrial beings. Documented evidence indicates that a significant percentage of the incidents were spurious, inaccurately reported, or embellished by later authors.

Origins: the earliest suggestion of unusual disappearances in the Bermuda area appeared in a September 17, 1950 article published in the Miami herald (associated press) by Edward Van Winkle Jones. Two years later, Fate magazine published "Sea mystery at our back door", a short article by George X. Sand covering the loss of several planes and ships, including the loss of Flight 19, a group of five U.S. Navy Grumman TBM Avenger torpedo bombers on a training mission. Sand's article was the first to lay out the now-familiar triangular area where the losses took place. Flight 19 alone would be covered again in the April 1962 issue of American legion magazine. In it, author Allan W. Eckert wrote that the flight leader had been heard saying, "We are entering white water, nothing seems right. We don't know where we are, the water is green, no white." He also wrote that officials at the Navy board of inquiry stated that the planes "flew off to Mars." Sand's article was the first to suggest a supernatural element to the flight 19 incident. In the February 1964 issue of Argosy, Vincent Gaddis' article "The deadly Bermuda triangle" argued that flight 19 and other disappearances were part of a pattern of strange events in the region. The next year, Gaddis expanded this article into a book, "Invisible horizons".

Vocabulary.

Loosely- in a way that is not firmly fixed; not exactly (слабо, приблизительно).

Extraterrestrial- (coming from) outside the planet Earth (внеземной, инопланетный).

Spurious- false and not what it appears to be, or (of reasons and judgments) based on something that has not been correctly understood and therefore false (поддельный, фальшивый).

Invisible- impossible to see (невидимый, незримый).

Exercise 1. Answer the questions.

1. Have you ever heard about the Bermuda triangle?
2. What other name does it have?
3. What is its location?
4. Why is this place considered mysterious?
5. Is the vicinity of the Bermuda triangle one of the most heavily traveled shipping lanes in the world?
6. What are the popular versions of the mystery?
7. Should we believe these explanations?
8. When was the earliest suggestion of unusual disappearances in the Bermuda area?

Exercise 2. Decide if the following statements are true or false.

1. The Bermuda triangle is also known as the Devil's triangle. T/F.
2. It's a region in the western part of the North Atlantic ocean. T/F.
3. It's a place where lots of aircrafts and ships are disappeared. T/F.
4. All of them disappear under mysterious circumstances. T/F.
5. Scientists attributed these disappearances to the paranormal. T/F.

Read and translate the text.

Emergency services

Emergency services and rescue services are organizations which ensure public safety and health by addressing different emergencies. Some of these agencies exist solely for addressing certain types of emergencies whilst others deal with ad hoc emergencies as part of their normal responsibilities. Many of these agencies engage in community awareness and prevention programs to help the public avoid, detect, and report emergencies effectively.

The availability of emergency services depends very heavily on location, and may in some cases also rely on the recipient giving payment or holding suitable insurance or other surety for receiving the service.

Main emergency service functions. There are three main emergency service functions:

- 1) Law enforcement —enforcing the law to prevent crime, investigates crime, reach out to the community and write reports.

2) Fire service — providing firefighters to deal with fire-related emergencies. Also responsible for fire protection through prevention measures, as well as rescue services.

3) Emergency medical services— providing ambulances and staff to deal with medical emergencies.

In some countries such as the UK, these three functions are performed by three separate organizations in a given area. However, there are also many countries where fire, rescue and ambulance functions are all performed by a single organization (fire service based EMS).

Emergency services have one or more dedicated emergency telephone numbers reserved for critical emergency calls. In some countries, one number is used for all the emergency services (e.g. 911 in the U.S., 999 in the UK). In some countries, each emergency service has its own emergency number.

Vocabulary.

Emergency –something dangerous or serious, such as an accident, which happens suddenly or unexpectedly and needs fast action in order to avoid harmful results (крайняя необходимость, авария).

Rescue –to help someone or something out of a dangerous, harmful or unpleasant situation (спасать).

The UK –the United Kingdom (Соединенное Королевство Великобритании и Северной Ирландии).

Ad hoc-made or happening only for a particular purpose or need, not planned before it happens (для данного случая, специальный).

Exercise 1. Answer the questions.

1. What kind of organization is emergency service?
2. What is the task of such agencies?
3. What are the certain conditions of the efficient work of such agencies?
4. What are the three main emergency service functions?
5. In what countries these three functions are performed by three separate organizations in a given area?
6. Give us some information about emergency telephone numbers.

Exercise 2. Decide if the following statements are true or false.

1. Emergency services ensure public safety and health. T/F.
2. Many of these agencies help public avoid emergencies effectively. T/F.
3. There are three main emergency service functions. T/F.
4. Emergency services have telephone numbers for emergency calls. T/F.
5. Each emergency service has its own emergency number. T/F.

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