МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
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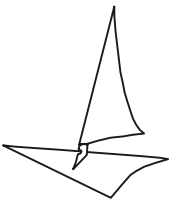
# FOCUS ON ECOLOGY

## Starter

*Рекомендовано Методичною радою УДМТУ*
*як навчальний посібник*



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Посібник передбачає розвиток усного мовлення та письма. Оригінальні тексти фокусують увагу студентів на екологічних проблемах та примушують замислитися про роль української та світової спільноти у вирішенні цих проблем.

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**FOCUS ON ECOLOGY**
**Starter**

*Навчальний посібник*

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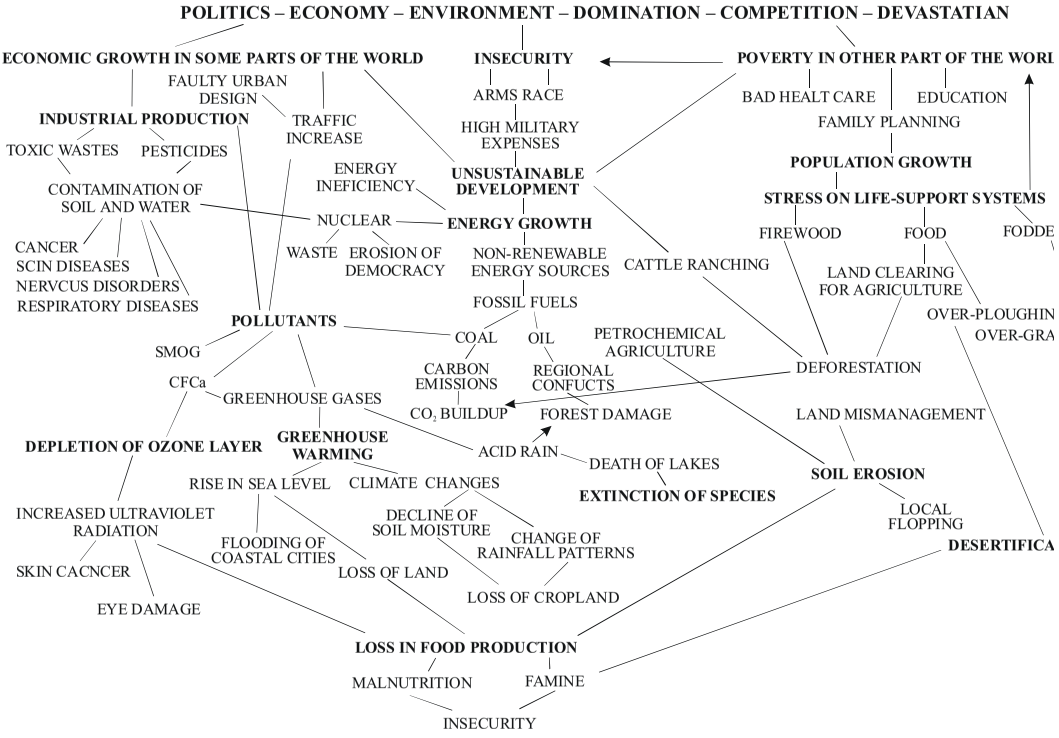
# INTERDEPENDENCE OF WORLD PROBLEMS




This is a simplified chart. It is based on the report State of the World 1988 by the Worldwatch Institute and shows **the systemic interconnectedness and interdependence** of our major global problems. It is clear these problems are different sides of one single crisis, which is **a crisis of human values**.

**Are you environmentally friendly?**

1. If your university were organizing a newspaper recycling collection, what would you do?

*a) I would take all my family's newspapers to the university;*

*b) I would give magazines I had just finished reading;*

*c) I would collect newspapers from all my neighbors and take them to the university.*

2. If you were old enough to buy a car, which kind of car would you buy?

*a) I would buy a big, fast car, such as BMW or Jaguar;*

*b) I would buy a small car that doesn't use much petrol;*

*c) I wouldn't buy a car. I would use my bike or public transport.*

3. It is a very hot summer and there is a hosepipe ban (when you are not allowed to use a hosepipe to water the garden). If all the flowers were dying, what would you do?

*a) I would water the garden at night when all the neighbors are asleep;*

*b) I would use the water from my bath to water the garden;*

*c) I would let the flowers die.*

4. If you saw a TV program about people putting poisonous chemicals into the sea, what would you do?

*a) I would talk to my parents about it;*

*b) I would join an environmental group, such as Green peace;*

*c) I would switch over to my favorite program on another channel.*

5. There is a big demonstration in your town to stop a nuclear power station being built. If you had arranged to go to the cinema with your friends on the same day as the demonstration, what would you do?

*a) I would go to the demonstration and arrange to go to the cinema the next day;*

*b) I would go to the cinema;*

*c) I would go to the cinema if my friends were going, too.*

6. There's too much traffic in your town. There are plans to build a new road to reduce the traffic in the town. However, the new road will destroy the area of natural beauty. What do you think people should do about it?

*a) They should sign a petition against the new road;*

*b) They should be happy about the new road because it would make the town a safer place;*

*c) They should go and lie in front of the machines in order to stop the road being built.*

7. It's national "Get on your bike" day, when all people are supposed to use their bikes instead of cars. If your mum and dad refused to take part, what would you do?

*a) I would be very angry with them;*

*b) I would hide their car keys so they couldn't use their cars;*

*c) I would agree that "Get on your bike" day is a stupid idea and my parents need to use the car.*

8. You are going to the forest for the day. What would you like to do there?

*a) I would like to observe plants and animals in the forest;*

*b) I would like to go mountain biking through the forest;*

*c) I would like to make a fire and have a barbecue.*

Add up your score:

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| A | 1 | 0 | 0 | 1 | 2 | 1 | 1 | 2 |
| B | 0 | 1 | 2 | 2 | 0 | 0 | 2 | 1 |
| C | 2 | 2 | 1 | 0 | 1 | 2 | 0 | 0 |

0–4 points: You don't really know much about the environment. You probably do care about it, but you don't think you need to do anything.

5–10 points: You are quite interested in the environment and you are prepared to help to protect it, as long as you haven't planned to do something more interesting.

11–15 points: You are definitely environmentally friendly. You will do anything you can to protect the environment and you try to make your friends and family to think about the environment, too.

# PART I
# DISASTERS

Disaster is a sudden, extremely unfortunate event that affects many people. Disasters have included natural occurrences, such as: earthquakes and floods (nature's disasters), as well as accidents involving airplanes and ships.

(*World Book*)

**I. Warm-up questions (Picture 1).**

1. What kinds of nature's disasters in this picture do you know?
2. Which of them have you watched?

Picture 1

3. What kinds of nature's disasters shown in this picture may occur in the place you live in?

4. What causes these nature's catastrophes?

5. What can you do to protect yourself from them?

**II. Study Disaster ABC words and expressions.**

**A** ash, avalanche, altitude, arid, artificial, air;

**B** blizzard, blast, breeze, blow-up, bank boulder, bay;

**C** channel, concrete, cumulonimbus clouds, collapse, chute, circuit, clay, cyclone, crust, core, cinder, climate, crash, condition, cloud cluster, cool, content, cycle technology, condenser, carbon dioxide, coast, canyon;

**D** disaster, destroy, damage, downburst, debris, detect, dormant, drainage, dry, dam;

**E** earthquake, explosion, eruption, erratic path, extreme, edge, epicenter, environment, ecologist, efficiency, exhaust gases, extinct;

**F** flood, funnel, fold, flash, freeze, flat, failure, fissure, flaw, fire resistant, facility, fuel, feature, front;

**G** gust, gale, gash, greenhouse, gas;

**H** hurricane, hail, howl, hemisphere, hot, huge, humid, hazard, horticulture, high, seas, hill;

**I** influence, impact, internal activity, island;

**L** lightning bolts, layer, light wave, landscape, level, lose, loss of life, launch, lake, lubrication;

**M** moist, melt, monsoon, mudslide, molten iron, magnitude, magma, mantle, margin, mountain, mudflow;

**N** network;

**O** occur, offshore, overflow, ocean;

**P** pressure, prediction, pile up, precipitation, plate margins, pebble, prone to, plain, power-plant, pipe;

**R** runoff, rock, rapid, require, rainfall, rescue, riverbank;

**S** surge, surface, scale, spill, steam, slope, shock, shrink, speed, stroke, sleet, strike, solar, sources, spell of water, sea, steep, seismic waves, silt, stream, strengthen, surge;

**T** tornado, thunderstorm, tide, torrential rain, tremor, tropical storm, typhoon, tropical depression;

**U** urgent;
**V** volcano, victim, vapor, vortex, violent, vent, vegetation, violent, valley;
**W** whirl, waterspout, weather, wind, watch, warning, watershed, waste, warm, wave;

**III. Distribute the words and expressions given above according to the groups and fill in Table 1.**

*Table 1*

| Names of nature's disasters | Features of nature's disasters | Landforms |
|---|---|---|
| | | |

**IV. Read and answer the questions. Explain the difference between the climate and weather.**

### *Climate*

*1. What is the function of climatologists?*

**Climate** is the sum of all weather events in an area during a long period of time. **Climatologists** (scientists who study climate) often describe climate in terms of an area's average monthly and yearly temperatures and amounts of precipitation. **Precipitation** consists of rain, snow, hail and other forms of moisture that fall to earth. Climatologists also describe the year-to-year changes that produce major wet and dry spells.

*2. How is the climate described?*

Climate and weather are not the same. Weather is the condition of the atmosphere during a brief period. One day's weather may be stormy, wet and cool. The next day may be sunny, dry and somewhat warmer. To determine the climate of an area, scientists study the daily weather conditions over many years.

Every place on the earth, no matter how small, has its own climate. Place that lie far apart may have a similar climate. Yet there may be important differences between the climate of a hill and a nearby valley, or of a city and the surrounding countryside.

### *Weather*

**Weather** is the condition of the air that surrounds the earth. The air may be hot or cold, cloudy or clear, windy or calm. It may bring rain, snow, sleet or hail.

*1. What is the influence of weather on people's life?*

The weather affects our lives in numerous ways. For example, the type of clothing we wear depends largely on the weather. We put on heavy clothes when it is cold and dress lightly when it is hot. We also heat our homes in cold weather and cool them in hot weather. In many cases, we decide whether to spend our leisure time outdoors or inside according to the weather. The weather even affects our moods. People often feel more cheerful on a sunny day than on a gloomy one.

*2. How can agriculture suffer from weather?*

The weather has an enormous impact on agriculture. Farmers need clear weather to plant and harvest their crops. The plants require the right amount of sunlight and rain to grow and ripen. A storm or a sudden frost can damage or kill much of a crop. In such cases, the food produced from the plants that survive cost more.

*3. What is the impact of weather on other branches of economy?*

Industry, transportation and communication also suffer during bad weather. The construction of buildings, bridges and roads may be delayed by rain, snow or extreme cold. Snow may make trains late. Fog often prevents airplanes from taking off. Icy highways slow traffic. Storms may break power-lines and telephone wires. Thunderstorms may disrupt radio and television broadcasts. Even more serious is the lost of lives that sometimes results from severe storms.

*4. What is weather?*

The weather is not the same as climate. Weather is the condition of the air during a brief period. Climate is the average weather of an area over a long time. Scientists often describe climate in terms of average temperature of a region and the amount of rain and snow the area receives. A region's weather may change greatly from day to day. But the average temperature and the amount of rain and snow remain about the same.

*5. Is it possible to predict weather exactly?*

People have tried to predict the weather for thousands of years. Today, scientists use complex instruments such as radar, satellites, and computers to forecast the weather. The forecasts are broadcast on radio and television stations and published in newspapers. Modern scientific instruments have made weather forecasting today more accurate than ever before, but predicting the weather remains a difficult inexact science.

**V. Read and say what weather forecasting involves and what forecasters rely on.**

***Forecasting weather***

Weather systems act as models for the process of weather forecasting – the attempt to predict the weather of a place for the next few hours or days. The U.S. federal government funds billions of dollars to the National Weather Service, which has four functions: to provide severe weather warnings, weather observations and forecasting, education, and aviation briefings. Along with the general forecasts broadcast on television and radio and published in the newspapers, the Weather Service provides specialized reports to such people as farmers and pilots.

The business of weather forecasting begins with the collection of weather data such as temperature, pressure, wind speed, wind direction, cloud forms, and rain. The data are plotted on maps and make it possible to analyze the general atmospheric conditions. The visual models of the weather systems are converted to numerical computer models. In mid-latitudes weather systems such as cyclones with their fronts and anticyclones are the main features of weather maps. They are the basic models that forecasters use to predict the weather after computing the speed, direction, and internal features of each system. Since the continuous flow of data indicates that they are changing, sometimes in unexpected ways, forecasters must continuously update their predictions.

At present, forecasts in mid-latitudes cover only a few days ahead since the systems themselves only last that long – exceptions being larger blocking anticyclones. Forecasting weather for longer periods of time will require a better understanding of how the polar-front jet-stream functions and links to surface weather systems. The forecasts are not perfect, but improving technical facilities and understanding have led to great improvements in the past thirty years.

**VI. Find the odd word in this list of words from the text given above.**

**Precipitation, hail, moisture, dry, wet, conditions, sleet, storm, front, forecast, heat-wave, pressure, cyclone, jet-stream, speed**

**VII. Read the texts again, find the following words and expression in these texts and give the translation or definition.**

**Weather events, form of moisture, dry spells, lost of leaves, predict the weather, weather warning**

### *Nature's disasters*

A great number of **nature's disasters** are caused by the weather. The matter is that our planet the Earth is surrounded by a thick mass of air, which is called the **atmosphere**. The atmosphere is about 1000 km thick and can be divided into several layers: **troposphere**, **stratosphere**, **mesosphere**, **thermosphere** and **exosphere**. The troposphere, the layer that is the closest to the Earth is very changeable. The troposphere consists of swirling air and water vapor and it influences our weather. All the changes in this layer cause **thunderstorms** and **blizzards**, **hurricanes** and **tornadoes**.

**VIII. Read and answer the questions.**

### *Thunderstorms, clouds, lightning, hail*

*1. What are clouds?*

**Clouds** are masses of water droplets, ice, particles or both suspended in the atmosphere. They are in constant motion. Rain clouds are dark because they are full of water. Sunlight can't penetrate them. Clouds may be of different types.

**Cumulonimbus clouds** (cumulus – heap, nimbus means that rain is likely to fall) are very tall and form in unstable conditions where air rises and water vapor condenses. The water droplets and vapor turn to ice when temperatures in the top of such clouds falls below freezing. See Picture 2.

*2. What are the types of lightning?*

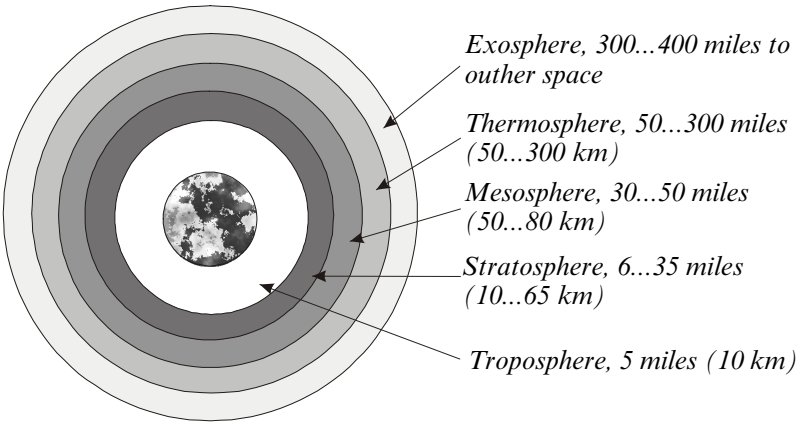
**Lightning** is a visible flash resulting from electrification within the cloud. Inside cumulonimbus clouds ice crystals and water are smashed together by strong air currents. They become charged with static electricity. Positively charged particles of ice and water pile up to the top of the cloud. Negatively charged particles are heavy, that's why they accumulate at the bottom of the cloud. When the difference in the electrical charges becomes too great, **lightning flashes** appear. These flashes may be of two kinds: **sheet lightning** (within the cloud) and **forked lightning** (between the cloud and the ground).

*3. What is precipitation?*

**Precipitation** is the deposition of atmospheric water on earth's surface. Over most of the globe, rain is the main form of precipitation. In cold regions snow is dominant. Water drops fall as **rain** or drizzle, the difference being drop size. **Snow** falls as ice crystals that are grouped into flakes. Other forms of precipitation include hail and sleet.

*4. How is thunder created?*

**Thunder** is the sound generated by the discharge of electricity. It is a sonic boom created by the heating and rapid expansion of air along the lightning path. The sound carries up to 10 km from source. Since light waves travel more rapidly than sound waves, the gap between a lightning flash and a thunder clap increases as the thunderstorm moves away from the observer. Lightning causes forest fires and is underestimated as a killer. Figures given by public agencies for lightning deaths are underestimates because not all incidents are recorded. Most lightning deaths occur outdoors in rural areas. Those who take shelter under trees are involved in a quarter of all lightning deaths; those who play golf, farm, swim, or boat are also particularly at risk. Four times more males are killed than females. Lightning occurrence should be an important factor in building design in areas prone in thunderstorms. In 1991 the Florida Department of Transportation had to replace a weigh station because it had suffered repeated lightning strikes.




Picture 2

*5. What are the kinds of the thunderstorms?*

*6. What are the stages in thunderstorm cell development?*

**Thunderstorms** are the most frequent and widespread of all weather systems. Some 16 million thunderstorms occur around the world each year and as many as 2,000 are in progress at one moment. Thunderstorms are particularly frequent at equatorial regions. Kampala and Uganda average 242 thunderstorm days per year, and some parts of Indonesia over 300. Florida has the most in the North America, followed by the Southern Rocky Mountains.

There are three stages in thunderstorm cell development: initial stage, mature stage and dissipating stage. Thunderstorms that form when hot, moist air rises and makes cumulonimbus clouds are called **summer thunderstorms**. They occur more frequently at night than during the day. Thunderstorms that form when cold air pushes warm air ahead are called **frontal thunderstorms**. They can happen at any time of the day or during any season of the year.

At the head of thunderstorm cell development several dramatic types of weather may occur. The down draft during period of heaviest rain may become a powerful wind known as a **down burst**.

Large down bursts can last up to 30 minutes and have surface winds blowing up to 210 kph. They may cause damage over a swath 4 km long. Some down bursts have been blamed for aircraft crashes during thunderstorm weather.

*7. What was the largest hailstone?*

**Hail** is rounded or jagged lumps of ice. **Sleet** consists of raindrops that freeze as they fall through very cold air.

**Hailstone** often falls from thunderstorms in which ice crystals move up and down in the droufts of air. Continental interiors where cold and warm air masses favor the formation of hail, and the upper Mississippi valley has up to ten devastating hailstorms per year. The largest hailstone ever found fell in Kansas in 1970. It was the size of man's head and weighed 8 kg.

**IX. Read the texts.**

**1. Find the answers to the questions.**

**2. Read again and give characteristics of nature's disasters.**

**3. Fill in the chart and compare it with your group-mates' charts (see Table 2).**

**4. Write a paragraph or two about the nature's disasters and read it to the class.**

*Table 2*

| | Hurricanes | Tornadoes | Floods | Earthquakes | Volcanic activity |
|---|---|---|---|---|---|
| Formation | | | | | |
| Places they are usually found | | | | | |
| Characteristic features | | | | | |
| Forecasting | | | | | |

### *Tornadoes*

*1. What is tornado?*

Tornadoes are small, but extremely violent rotating storms in which a distinctive funnel-shaped column, or vortex, descends to the ground from the base of a thundercloud. The vortex is commonly around 100 meters in diameter at its base, whirls in a counter-clockwise direction in the northern hemisphere and has wind that may exceed 400 kph. Each funnel exists for only a few minutes and moves in an erratic path at 50 to 60 kph for up to 15 km, a few travel as far as 200 km. Waterspouts form in a similar way over the sea or a large lake but are usually less energetic and last for a shorter time.

*2. How are tornadoes formed?*

Tornadoes form in severe thunderstorms. Extreme temperature and pressure contrasts between the surface and upper troposphere generate very strong updrafts of air. Pressure at the center of a tornado funnel falls to about 900 mb. Wind speeds increase sharply with altitude.

The difference in wind speed between the ground and higher levels begins a horizontal rolling motion in the air. The strong updraft of air shifts the rotating air into a vertical position high above the ground. The conditions causing a tornado last only a few minutes, then the funnel dissipates and drops any debris being carried. Other tornadoes may form from the base of the same cloud, however, producing a stop and go progress across the land.

*3. Where are tornadoes usually found?*

Tornadoes are more common in the central United States than anywhere in the world. The Central United States are flat and provide a zone for air known as "tornado alley". In February most tornadoes occur near the Gulf coast, but the zone shifts northward during spring and summer, and in June the main area of occurrence is west of the Great Lakes.

*4. What do tornadoes cause?*

Tornadoes cause intense local damage because of their high wind and upward suction as the rotating funnel passes overhead. The forward moving of the tornado enhances the high speeds of the rotating winds. The greatest force impacts a building at the point where the tornado strikes. As the roof lifts, the walls collapse or are blown in. The National Weather Service in the USA forecasts probable tornado conditions and locally tracks the formation and progress of the storms. A **tornado watch** is announced when conditions make severe thunderstorms and tornado possible. A **tornado warning** is issued when a tornado is detected and people need to take shelter. The US averages just under 800 tornadoes each year, but the most violent, with winds over 33 kph make up only 2 % of this total.

### *Tropical cyclones and hurricanes*

*1. What are tropical cyclones?*

The hurricanes with which Americans are familiar are one of a group of tropical weather systems known collectively as **tropical cyclones**. The official definition of such systems is that wind speeds average over 115 kph for at least one minute. They are called **hurricanes** in the western Atlantic, **typhoons** in the western North Pacific and simple cyclones in the Bay of Bengal and Northern Australia.

Most tropical cyclone weather systems form between 10 and 20 degrees of latitude, and 70 % occur in the Northern Hemisphere.

*2. Is it possible to monitor tropical cyclones?*

Tropical cyclones are the most dramatic of a series of tropical weather systems that may develop from less to more intense storms. **Tropical storms** have average wind speed between 60 and 115 kph, **tropical depressions** have wind speeds up to 60 kph. The destructive nature of tropical cyclones and storms led to attempts to monitor and modify them. Weather satellites

and views from space make it possible to follow progress from tropical depression to cyclone and predict the future path for some hours ahead, but attempts to reduce their impact by dissipating their energy have met with little success.

*3. How do tropical cyclones develop?*

Tropical cyclones are not very common. They occur several times a year in summer, in early fall and vary in number from year to year. The Florida-Caribbean area has between four and fourteen per year, but greater number occurs in western Pacific ocean. Hurricanes form in the tropical North Atlantic Ocean. They develop from initial disturbance such as tropical depression, cloud cluster, or easterly wave into tropical storms and hurricanes and then die away. The hurricane stage lasts for a few days.

*4. What is the main feature of the hurricanes?*

A crucial transformation converts the cool-cored tropical storm into a warm-cored hurricane. The main feature of a hurricane is an eye or calm and clear central core. The eye shrinks in diameter as the hurricane intensifies. The steep pressure gradient between the high pressure of the eye and the low pressure of the wall results in horizontal winds up to 300 kph at the outer edge of the eye – the most dangerous part of the hurricane. The heaviest falls of rain occur from the inner ring of cumulonimbus clouds, but rain also falls from the spiralling arms of clouds that extend out from the center.

*5. What are the paths of hurricanes?*

Tropical storms that develop into hurricanes follow paths westward across the Atlantic, but their path diverge as they reach the western margin of the ocean. Some carry on through the Caribbean, some turn north and remain offshore, and some turn northwest, hitting the Gulf Coast, Florida or the southern Atlantic coast of the USA.

Hurricanes exist as long as the conditions of surface in flow of hot moist air and divergence aloft continue. They dissipate when these conditions cease as they move over land or cooler ocean water. When a hurricane reaches about 30 degrees North, it meets colder air and fronts develop as it changes to a mid-latitude cyclone.

### *Plate tectonics, earthquakes*

*1. What causes earthquakes?*

**Earthquakes** and volcanic eruptions nearly all occur along plate margins. They are short-lived events, taken periods of time from a few seconds to several years, but are expressions of long-term internal activity. Both may cause considerable damage and loss of life when they affect settled areas. Plate movements build up stresses in the lithosphere to the point where something has to give. The stresses slowly bend huge sections of rock until the rock snaps. The sudden failure of the rock produces shock waves known as seismic waves and earthquake is shaking or series of shocks generated by sudden movements in Earth's crusts or upper mantle. The strongest seismic waves are close to the focus of the shock – the point the rock failure – and tend to affect human activity most at the epicenter – the surface point directly above the focus. Earthquakes vary in size, or magnitude, as measured by instruments known as seismographs. In 1935 Charles S. Richter established a scale of earthquake magnitude in which each value is a tenfold increase over the value one unit of magnitude lower. Large earthquakes, such as that in San Francisco in 1989 (Richter 7.1) or those in Armenia and Iran (Richter 8.0) cause extensive surface damage within seconds of the initial shock.

*2. Where do earthquakes occur?*

The world distribution of earthquakes since 1960 shows that nearly all earthquakes, especially the very large ones, occur along plate margins. The greatest concentrations are around the margins of the Pacific Ocean and in the mountain area of Southern Europe and Asia. In 1812, the New Madrid (Missouri) earthquake caused widespread damage including the collapse of riverbanks along the Mississippi river. This may have resulted from a jerky movement of the North America plate.

### *Volcanic Activity*

*1. How do volcanoes operate?*

Volcanic activity provides further evidence for the mobility and internal energy of the planet. It includes all ways in which molten rock, or **magma**, erupts at Earth's surface. Magma is a variable and mobile mixture of liquids, gases, and solid rock that moves slowly and has the consistency of thick oatmeal. The magma erupts through the pipe-like

vents or elongated fissures to produce a variety of volcanic features. A **volcano** is a landform produced above a pipe-like vent. Surface flaws of molten rock issuing from fissures or volcanoes are called **lava**.

*2. Where are volcanoes located?*

The world distribution of volcanic activity, like that of earthquakes, is concentrated along plate margins. Ocean basins and some continental margins are the site of most volcanic activity. 60 % of the eruptions in historic times occur in and round the Pacific Ocean, an area often called the Ring of Fire. There are some 50,000 volcanoes on the floor of the Pacific Ocean. Some of these are **active**, having erupted in historic times; others are dormant and likely to erupt in the future or **extinct** and unlikely to erupt again. Some volcanic activity also occurs in the interior part of plates in the Pacific Ocean and African plate.

*3. What types of volcanoes are there on the Earth?*

Volcanoes may be of three types: **shield** volcanoes, **cinder** cone volcanoes and **composite** volcanoes.

Shield volcanoes are usually formed from quiet eruptions. The lava spreads out to form a broad base and gentle slopes. Manna Loa in Hawaii is an example of a shield volcano.

Cinder cone volcanoes are usually formed from explosive eruption. They have a fairly narrow base and steep slopes. Paricutin in Mexico is an example of a cinder corn volcano formation.

Composite volcanoes are usually formed from eruptions that have had both quiet and explosive periods. Layers of lava alternate with cinders or ash. Fudjiyama in Japan and Rainier in Washington are examples of composite volcanoes.

### *The story of Mount St. Helens*

*1. How does volcanic activity impact human activity?*

The eruption of Mount St. Helens in 1980 effected t he lives of thousands of people, remolded the local landscape, and had short-lived but widespread effect on the atmosphere. The main eruption of May 1980 was not totally unexpected event. Mount St. Helens is one of the several volcanoes of the Ring of Fire around the Pacific Ocean. A large eruption took place in 1800. Smaller eruptions continued until 1857 when activity ceased. In 1975 geologists predicted another large eruption before the end of the century. On March 27, 1980, a small eruption occurred with a

gush of steam and ash. People living within 25 km of the mountain were advised to leave. Further eruption opened a larger central crater 450 meters in diameter. The access to the immediate area of the mountain was controlled.

On May 18, 1980 the main explosion occurred. There was a strong earthquake. A column of finer materials shot 20 km in atmosphere. A powerful blast of gas and ash fragments at temperature up to 800 degrees moved at 160 kph. It charred trees and destroyed trucks, bridges and homes. Melted snow and water spilled from lakes, mixed with ash and cascaded down the valley in a mudflow that swept away logging equipment, and killed many fish in the river. The navigation channel of the Columbia River was blocked. Ash carried eastward in the upper troposphere was blamed for cool, wet June and July weather in Europe. Smaller eruptions continued through the 1980's. Since then, Mount St. Helens has continued to be a focus of geologic study, and minor volcanic activity has continued from time to time.

*2. Is it possible to prevent eruptions?*

The Mount St. Helens eruption demonstrates scientists' partial knowledge about volcanic activity. Although by the mid 1970's geologists knew that an eruption was likely to take place within the next few years and posted more urgent warnings just before the event, they could not be sure of the timing and size of the eruption. Certainly, they could do nothing to modify or prevent the eruption. After 123 years of no eruptions, people ignored the warning of imminent activity and built their habitations closer to the peak. No specific emergency procedure was devised to deal with the potential catastrophe. Even though the Mount St. Helens eruption occurred in a sparsely inhabited part of the US, 58 people died.

### *Floods*

*1. Why do floods occur?*

Flooding occurs when rivers cannot carry all the water running on the surface of the land and overflow the banks. Another reason of floods is very high tides that overflow sea walls. When thunderstorms and hurricanes bring a lot of rain in a short period, floods also occur. In spring, molten snows can cause floods.

*2. What is flashflood?*

Sometimes, **flashflood** occurs, when heavy rain overflows normal

drainage. In 1976, a flashflood surged through the Big Thompson Canyon in Colorado. The seething waters drowned 139 people and tore out bridges and sections of roads.

Weeks of heavy steady rain may be followed by flooding. In 1970, about 1 million Bangladeshis drowned when flood swamped island in the river Ganges. In 1931, 3,700,000 people died during the flood in China. Flood in Northern Italy caused 361 deaths.

### *Flows*

*1. What are the types of flows?*

Where there is sufficient water or ice for lubrication, regolith may flow rapidly. Mass movement **flows** have great proportions of rock debris of water or ice. Material with less water or ice in it requires steeper slope before movement will begin. The most rapid flows occur, where the slope is steepest or where the water or ice content is greater.

*2. What do mudflows include?*

**Mudflows** consist of clay and silt with pebbles and even boulders mixed with a relatively high water content, and they flow rapidly. They are common on the valley floor of semi-arid regions where occasional rainstorms cause flashfloods. The sudden onset of water sweeps up large quantities of loose rock debris. If rock boulders are present, the movement will be slower and shorter-lived. Following the Mount St. Helens eruptions, huge quantities of volcanic ash mixed with water from overflowing lakes and formed a massive mudflow.

*3. Where do earthflows occur?*

**Earthflows** are usually slower than **mudflows** because of lower water content, and they are more localized in extent. They are common on hill slopes of humid regions in places where there is so much soil water that the regolith swells and bursts through a cover of grass or other vegetation. Over a period of many years, earth flows may create extensive spread of debris at a foot of a slope.

*4. What is avalanche?*

**Avalanches** are high-speed flows of ice and wet snow containing varied proportions of rock. A snow avalanche may be almost purely snow; a debris avalanche consists almost entirely of rock. Avalanches occur in high mountains with steep slopes and, besides transporting rock and snow

downhill, make carve depressions in the surface, called avalanche chutes, as they travel downward.

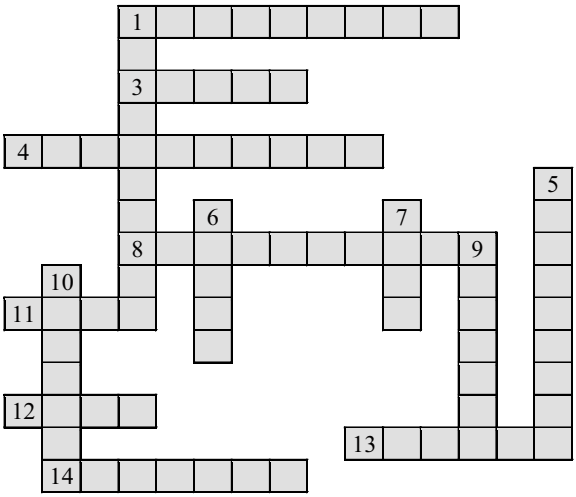
**X. Match the names of nature's disasters and places where they occur (see Table 3).**

*Table 3*

| | |
|---|---|
| **1. Hurricanes** | a) Kampala, Uganda, Indonesia, Florida, Rocky Mountains |
| **2. Thunderstorms** | b) The central US, the Gulf of Mexico coast, west of the Great Lakes |
| **3. Volcanic activity** | c) The Western Atlantic, the Bay of Bengal, Northern Australia, the Florida-Caribbean area, the Western Pacific ocean |
| **4. Earthquakes** | d) California, Armenia, Southern Europe and Asia, Japan |
| **5. Tornadoes** | e) Round the Pacific Ocean |
| **6. Floods** | f) China, Colorado, Northern Italy, Bangladesh |

**XI. Check yourself.**

***A disastrous puzzle***




**Across**: 1. High-speed flows of ice and wet snow containing varied proportions of rock. 3. Fluid or semi-fluid material under the earth's surface from which lava and other igneous rock is formed. 4. A sudden

local flood due to heavy rain. 8. A conclusive shaking or movement of the earth's surface. 11. The center of the earth. 12. Pellets of frozen rain falling in showers from cumulonimbus clouds. 13. The region between the crust and the core of the earth. 14. A violent storm of small extent with whirling winds over a narrow path often accompanied by a funnel-shaped cloud.

**Down**: 1. The envelop of gases surrounding the Earth or any other planet. 5. A storm with a violent wind, especially a tropical cyclone in the West Indies or America. 6. The outer rocky portion of the Earth. 7. The molten matter, which flows from a volcano. 9. A volcano that no longer erupts. 10. A temporarily inactive volcano.

**XII. Read and answer the questions. Give a short summary on this text, using the following:**

This text deals with…
In the first paragraph the author says that…
The author stresses that…
Further on it is pointed out that…
In the next paragraph we read about…
In conclusion the author says that…

### *Flood Danger*

*1. What causes flooding?*

Flooding by rivers and the sea causes more damage and loss of life than any other form of natural hazard. Flooding by rivers may be due to a seasonal maximum of rainfall, as in the monsoon countries, to runoff from melting snow, or to a single massive storm. Seasonal flooding occurs along the Ganges and Brahmaputra Rivers in the Indian subcontinent. It used to occur along the lower Colorado River following spring snowmelt. Sudden storms in arid regions may produce flashfloods that rapidly fill formerly dry stream channels and inundate surrounding areas. Flooding often occurs when several factors coincide, such as snowmelt, heavy rains, and high tide at the river mouth. The exceptional flooding in the U.S. Midwest in the summer of 1993 was caused by an unusual period of almost continuous rain.

One problem with efforts to prepare for river floods is that it is difficult or impossible to predict what will be the highest level reached by a flood and when it will occur. The higher flood levels occur less frequently, and

engineers classify flood levels by how often a flood of a certain size is expected to occur.

*2. What are the best ways to control flood waters?*

There are two main approaches to controlling floodwaters. Engineers can try to reduce a river's ability to flood, or planners and politicians can attempt to change human patterns of land use so that fewer people and less valuable property are affected. They can try to protect established uses of flood-prone areas or persuade those living and working in such areas to move.

Many attempts to combat flooding center on the control of storm flow entering the river. Such attempts include changes of land use in the upper parts of a watershed where woodland may be planted or arable land grassed to increase interception and reduce overland flow. In urban areas flood control measures include the building of water-retention dams.

The main effects of flooding occur downstream where a common response is to construct engineering works that modify the channel so that it will carry more water. Walls or artificial levels raise the bank levels, wider, deeper, or straighter channels increase their capacity, and diversion channels carry flood flows away from centers of population. The massive concrete channels built to protect the lower elevations of Los Angeles from flooding remain dry for most of the year.

*3. What are the measures of flood prevention and protection?*

The only reactions to flooding before the nineteenth century were to bear the losses and costs or avoid living on the flood plain. For many people in developing countries these are still the only options. In European and North American urban-industrial countries, factories and linked worker housing were built in flood-prone zones in the nineteenth century because the land was cheap. Subsequent floods produced disastrous losses of life and property. Emergency actions rescued and rehabilitated victims.

During the twentieth century, effort and money have been devoted to the alteration of stream channels to prevent flooding and improve navigation.

During the 1970s, U.S. federal programs to cope with flood disasters began to require that local land use zoning agencies should prohibit many uses of the more hazardous zones and that landowners in flood-prone areas must have flood insurance. People do not like leaving familiar areas, however, and resist the additional expense of insurance policies. Progress

in flood prevention and protection remains slow, but the United States is still more advanced in this than most countries.

**XIII. Translate the text (time – 20 minutes).**

***Landslides – weak rocks and ignorance***

Pittsburgh, Pennsylvania, is built in and round deep valley carved into the Appalachian Plateau. Landslides are major hazard in the area, destroying homes, blocking roads and railroads, and breaching reservoirs. Damage from landslides in Allegheny County cost millions of dollars each year. Most of these landslides are slumps; but earth flows, rock falls and debris slides also occur. Fortunately, many of the mass movement are slow moving and personal injures are rare.

The area is susceptible to landslides because of its rock structure. The plateau surface is capped by thick layers of sandstone and limestone. Water flows downward through cracks in these layers, weakening the shales and clay rocks below. Over thousands of years, however, the valley slopes have been stabilized by the accumulation of rock debris at their base. Once the angle of slope was reduced in this way, vegetation anchored the slope surface. In the natural state, few landslides would occur today.

Human activities, the main cause of the increasing number of landsides, promote slope instability and failure in several ways. Buildings constructed at the top of a slope exert downward pressure on deep unconsolidated regolith beneth. Industrial wastes dumped on slopes add more weight. Removal of vegetation eliminates its binding effect on steep slopes. The widening of narrow valleys for road construction involved the excavation of material at the base of slopes, causing the slopes to steepen. All of these actions make slopes unstable or affect the movment of water through the slope materials. Former landslide areas once stabilized by vegetation are particularly vulnerable to being mobilized again. In backyards along the slides of the Monongahela valley, cracks up to 3 m wide and 10 m deep opened because of the extra weight of new buildings and removal of slope vegetation.

People, who buy homes in the Pittsburgh area or in the other area with a history of mass movements, should look for a signs of landslide activity. Cracks in buildings, poorly fitting doors and windows, leaning fences, tilted trees or utility poles, broken underground pipes, leaking pools, and ground cracks are all significant indicators.

Actions to mitigate landslide damage include avoiding building or dumping close to the tops of steep slopes, preserving the lower partitions of old landslide deposits, and maintaining vegetation cover on slopes. Such measures are increasingly part of building codes, especially in urban jurisdictions.

**XIV. Study the region you are living in and find out if any kinds of natural events mentioned in the texts given above ever occurred in this place.**

**XV. Write down a short essay (100…120 words) according to the plan.**

1. The region you live in (name, geographical position).
2. The climate of the region.
3. The weather of every season.
4. Nature's disasters that ever occur in the region.

**Be ready to present your essay to the class.**

# PART II
# YOUR CLEAN SURROUNDINGS: CHOOSE IT OR LOSE IT

Why did Nature create man?
Was it to show that she is
big enough to make mistakes,
or was it pure ignorance?

*Holbrook Jackson* (*1847–1948*)
*English journalist, author*

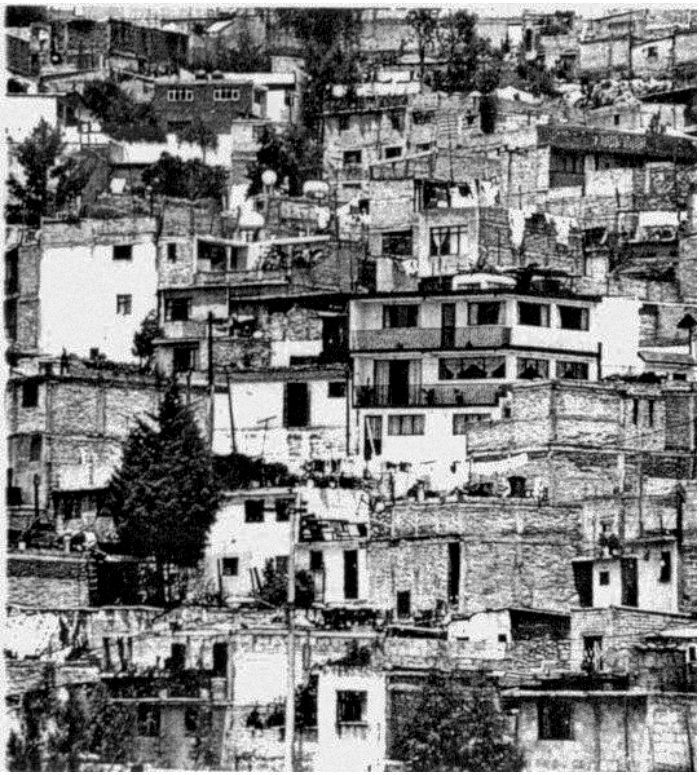
**I. Warm-up discussion.**

1. Is it very simple to choose your clean surroundings (house, flat, garden, school, classroom)?
2. How many of these things can you do in your neighbourhood?
– play chess, dominoes, football, volleyball in the street;
– take a dog for a walk;
– buy milk, sugar, bread, fruit;
– go to the library?
3. Where are the nearest entertainment, industrial, green, shopping sports areas?
4. What do you think your surroundings are: a flat, a house, a yard, a district, a city, a country, a planet?
5. What are the words that come to your mind and are connected in some way with the topics: land and sea, transport, problems, damage, opinions, destroy, protest, protect?
6. Do you like the place in Picture 3? Why?

**II. Study these words and expressions:**

**A** acid(ic), acid rain, air, alternative, atmosphere;
**B** bacteria;
**C** carbon dioxide, chemical, congestion;
**D** decay, decompose, dumping, demonstration;
**E** the environment, energy, earth, erosion;
**F** fungus, fossil fuel, freshwater, food chain;
**G** greenhouse effect, global warming, green products, green issues;
**H** health, holes (in the ozone layer), habitat, harm, human impact;

**I** (pollution) indicator, ice caps, industry, (human) influence;
**J** jungle;
**K** knowledge (environmental);
**L** land fill site, landscape. lake;
**M** microbes, methane, mountain;
**N** nutrients, nature, natural resources;
**O** organic matter, oil. overuse, ozone layer;
**P** poison(ous), pollution, pollutant, power station, protest, protect, pesticide;
**Q** (air, water) quality;
**R** recycle, reuse, rubbish, raw materials, rainforest;
**S** surroundings, seaside, sulphur dioxide, solar power, soil, sewage, smoke, smog;



Picture 3

**T** throw away, treat(ment), toxic (waste);
**U** untreated (sewage, wastes), ultraviolet light, underground;
**V** vapour, valley, visual pollution;
**W** waste (bin), wildlife, water, wind power;
**X** X-ray, xerox;
**Y** year;
**Z** zone.

**Divide the words into 5 topic groups.**

**III. Read the text and explain what is of primary importance to you (a flat, a house, a yard, a district, a city, a country, a planet). What is the environment?**

## A SHORT ENVIRONMENTAL ENCYCLOPEDIA

*1. What is decay?*

When you find a piece of brown and soft apple, mouldy bread (food), skeletons of last year's leaves or wood or anything else that was alive (**organic**) and see they are rotten, you understand they started to **decay**. Decay is caused by small organisms: **microbes** (**fungi**, **bacteria**). When fungi and bacteria feed on dead organic matter they are called **decomposers**. **Decomposing** is another word for rotting or decaying. Decomposers produce a liquid that dissolves the plant or animal they are feeding on and take this liquid into themselves. The process is slow and gradual.

*2. When is decay useful (decomposing)?*

1) bacteria: sometimes it is useful: in the cheese and yoghurt business, in making compost, in cleaning oil tanks on board ships and in oil refineries;

2) fungi: in beer and wine making

Another use of decay is **compost**: a mixture of the **organic matter** (old potato peelings, grass cutting, shredded newspaper) under right conditions (warmth, moisture, oxygen). Compost holds moisture and plant **nutrients** (chemicals that the plants need to grow), provides food for earthworms and kills weeds (plants growing where they are not wanted).

*3. What is waste? How may the problem be solved?*

**Waste** is everywhere, and everyone produces waste: bags, boxes, cellophane wrappers, plastic, aluminium, glass bottles, newspapers, left-over food. Many of the things which are thrown away every day can be

reused or recycled, i.e. turned into something useful. Recycling helps conserve the environment.

There is no real difference between reuse and recycling. They mean that the objects can be used again. Either way a lot of waste is avoided. For example, milk bottles are reused many times, at least 30 times, before they are melted down to be remade, to be recycled.

Every year in Britain alone, 18…20 million tones of waste is buried in the ground.

*4. Where is the rubbish taken? What are its main problems?*

You **throw** something **away** into a **waste bin** at the University, in the street, at home. **The refuse collectors** collect your **rubbish** and take it to **a land fill site**. There are a lot of problems of **dumping** our rubbish in land fill sites:

– They smell. It means they give off a number of gases. One of them is **methane** which burns easily. But it may be piped away and used as a source of energy.

– They contain **poisonous chemicals** which poison water.

– They attract unwanted wildlife (foxes, mice, rats, gulls) that can transfer diseases.

*5. What is pollution?*

**Pollution** happens when something is added to the environment that must not be there. The only animal that causes pollution is the human animal. Pollution comes in many forms: dropping a packet or plastic bag or oil spill in the sea.

**Pollution indicators** are used for invisible **pollutants**. They show if pollution is present.

There is a group of plants that are very sensitive to air pollution: **lichens**. They die because of the **air pollution**.

There are also animals, insects, fish that are also very sensitive to the water pollution. If there are only red worms, water is badly polluted. If there are the trout in water, its quality is high.

*6. What are fossil fuels?*

Coal, gas, oil, peat are called **fossil fuels**. They were made many millions of years ago.

*7. What is the greenhouse effect? What is global warming?*

The **greenhouse effect** is creating a slow warming up of Earth's surface and atmosphere. It is caused by a large number of gases. **Carbon dioxide**,

one of them, is polluting the atmosphere. It is produced when petrol or diesel is burned in a car engine, when anything organic is burned. It is produced in factories, power station, motor cars every day. Carbon dioxide in the atmosphere does the same job as the glass in the greenhouse. The result is called **global warming**.

*8. What are the reasons of acid rains?*

**Sulphur dioxide**, **nitrogen dioxide**, **carbon dioxide** are produced by power stations and factories. They rise in the air and are flown by the wind. Then they dissolve in water and make it **acidic**. When it rains, the rainwater falls as "**acid rain**" which causes a lot of problems: kills the fish in livers and lakes, animals in the forest, plants growing in the acidic **soil**.

*9. What is sewage?*

**Sewage** is a mixture of waste from many places. It includes human waste from toilets, **waste water** from every house and factory, rain that has run into drains, industrial waste from factories.

*10. What is wildlife?*

**Wildlife** is ... animals and plants live and grow in natural conditions.

All over the world, wildlife is being threatened because habitats (the natural home of a plant or animal) and woodlands are being destroyed. Many species (a group of animals or plants of the same kind) are called endangered (one that may soon no longer exist, they can become extinct). For example, wolves are now an endangered species in Europe. Some species are protected by law, so that it is illegal to kill it or harm it.

*11. What is the environment?*

The **environment** is the air, water and land where people, animals, plants live and the way they depend on each other so that life can continue. That's why all over the world people try to find environmentally friendly ways to deal with the environment causing it less harm.

Green issues, i.e. the ideas about the environment, are discussed in mass media.

**IV. Match the left column with the right column according to the role they play:**

| | |
|---|---|
| 1. Trout | a) to produce power; |
| 2. Rede worms | b) to test air pollution; |
| 3. Lichens | c) to turn useless things into useful; |
| 4. Fungi and bacteria | d) to be threatened; |
| 5. Recycling | e) to decompose; |

| | |
|---|---|
| 6. Pollution | f) to be prevented; |
| 7. Fossil fuels | g) to test water quality; |
| 8. Global warming | h) to cause a lot of problems; |
| 9. The green house effect | i) to kill the fish, animals and birds; |
| 10. Acid rains | j) to be preserved; |
| 11. Sewage | k) to conserve the environment; |
| 12. Wildlife | l) to test if water is badly polluted. |
| 13. The environment | |

**V. Explain what makes rubbish, that missed the bin, to the environment:**

| | | |
|---|---|---|
| Bottles | Streams | Birds |
| Plastic bags | Countryside | Animals |
| Cans | Sea | Plants |

**VI. The place you live in.**

– Look at the pictures and write 5 words or expressions to describe each house.

– Look at the chart and fill in the information about your house.

| Your house | The ideal house you would like to live in |
|---|---|
| Number of storeys | |
| Materials | |
| Place it is situated | |
| Number of inhabitants | |
| Surroundings | |
| Neighbourhood | |

**Describe the house you would like to live in (the surroundings):**
advantages/disadvantages;
use of space;
entertaining visitors.
**How can you improve your surroundings?**

**VII. Study the place you are living in and find examples of all the facts mentioned in the text. Write down a short essay according to the plan:**

1. The place you live in (description).
2. Main environmental problems.
3. How they are solved.
4. Your proposals how to solve them.

**VIII. Read the text and find the names of animals and plants and fill in Table 4.**

*Table 4*

| The names of animals and plants | The place they live in a city | The dangers for them in their city life | The ways of helping them to survive |
|---|---|---|---|
| | | | |

## WILDLIFE IN A CITY

The plants and animals that live together in a habitat or microhabitat all have to feed. They need energy to grow and reproduce. They all become links in a food chain. The Sun provides the energy that is used to make food in plants and this passes along the food chain Each link passes energy onto the next link in the chain. The first link in the chain is always a green plant. Then comes a herbitore, a plant-eater. Then comes a carnivore.

Even in a busy town or city centre there are a lot of plants and animals who can survive. But there are far fewer species of plants or animals in this habitat than there are in a pond, lake, woodland or a field.

Some plants are planted in special places, flower beds or containers. Weeds are wild plants and they usually grow there where people don't want them to grow. Some plants are neither weeds any plants. They are lichen and mosses which grow on stonework or in cracks in walls.

There are a lot animals and birds in a busy city centre. During the daytime most animals hide and avoid human beings. Birds can be seen and heard every where: sparrows, pigeons. There are nocturnal animals which can move around in a darkness and are well adapted to night time: woodlice, centipedes, millipedes, cockroaches, rats.

There are many places for small animals to live and hide in: between the pavement slabs there are gaps and underneath the stones it is cool, dark, damp, ants and woodlice can live there. Mice can live in a pile of old boxes. Shrubs and flowers provide food for bees and caterpillars. Even foxes can live and rear their young.

Tufts of grass are some of the weeds that grow everywhere: between stones, in cracks, beneath shrubs.

Animals find it easier to hunt for waste food thrown away by human beings than to hunt for their "natural" prey.

The urban fox has learned that the contents of dustbins are good to eat and it is much easier to turn out a dustbin than it is to hunt.

Animals that live in the towns and cities don't have a large choice of things to feed on. There are fewer animals than in a woodland and far fewer places for them to live and produce young. Sparrows, pigeons, starlings move about on the ground looking for food that is dropped by humans (crisps, crumbs, bread). They are more likely to be eaten by cats.

Under paving slabs there live spiders and ants that eat green plants materials, fungus, the "sweet sugar" produced by aphids. A food web in town can be very large and very varied.

**IX. Think about the food chain for some of wild animals living in a city.**

**X. Study the following words and expressions.**

**The place you study at**

| | | |
|---|---|---|
| facility | (in) appropriate | to lack |
| right to | (sanitation) facilities | to practice |
| condition | poor conditions | to improve |
| environment | poor (sanitation) | to focus on |
| health | environment | to develop |
| skills | safe (sanitation) facilities | to promote |
| supply | clean (sanitation) facilities | to achieve |
| ability | existing practices | to match |
| nutrition | transport facilities | to damage |
| resource | safe | to sustain |
| approach | unsafe | to lack access to |
| practice | existing | to improve existing |
| household | accessible | facilities (conditions) |
| community | effective | to improve health |
| access | environmental education | (education) |
| access to facilities | poor health | to develop necessary skills |
| right to good health | healthy and safe school | to improve hygiene |
| right to human dignity | environment | conditions |
| conditions of sanitation | good health and nutrition | to improve sanitation |
| facilities | | to promote the focusing of |
| the ability to learn | | resources on… |
| water supply | | to achieve good results |

**XI. Read the text and answer the questions:**

1. What is the problem?
2. What is the aim of the Global School Sanitation and Hygiene Education Project?
3. What is the aim of the FRESH Start approach?

## FOCUSING RESOURCES ON EFFECTIVE SCHOOL HEALTH: A FRESH STEART TO IMPROVING THE QUALITY AND EQUILITY OF EDUCATION

The School Sanitation and Hygiene Education Notes and News Bulletin is part of the joint UNICEF/IRC global School Sanitation and Hygiene Education project and is published twice a year. SSHE Notes and News aims to provide a channel for the dissemination of good practices, current information, knowledge and experiences to all who have an interest in the subject.

Worldwide more than 2,4 billion people lack sanitation facilities and are unable to practise such basic hygiene as washing their hands in safe water. Access to sanitation facilities is a fundamental right that safeguards health and human dignity. The conditions of sanitation facilities in primary schools in rural and urban areas in developing countries are often bad. Most of the schools lack appropriate sanitation facilities and most of the existing facilities are in a poor condition and are not safe for children. Due to the poor sanitation environment, schools become unsafe places where diseases can be transmitted.

By focusing on school-aged children and giving them tools and knowledge to change behaviours, they can become agents for change. After the family, schools are the most important places of learning for children. Schools are a stimulating learning environment that can support positive behavioural change. As a result children may question existing practices in the household and become agents of change within their family and communities. As future adults they will be better prepared to care for their families' and communities' own health and environmental sanitation.

Poor health affects the ability of school-aged children to learn and therefore influences their perspectives on life. Access to safe and clean sanitation facilities is a child's right. Improving the sanitation and hygiene in our schools and the development of life skills is both necessary now and an investment in the future, hence concerted efforts are needed.

***Looking for sustainable approaches towards the development of a safe and healthy school environment and children's life skills.***

In February 2000, UNICEF and IRC started the Global School Sanitation and Hygiene Education project, financed by the Dutch government. It will be carried out in six countries: Nepal and Viet Nam in Asia; Burkina Faso and Zambia in Africa; Colombia and Nicaragua in Latin America. The project is expected to last for two and a half years and will test and implement the approach described in A Manual on School Sanitation and Hygiene, developed by UNICEF in 1998.

The overall aim of the present and future health and education of school-aged children improves through better hygiene behaviour and a healthy school environment. The project focuses on the development of life skills, a healthy and safe school environment and outreach to families and communities. The project starts with a workshop that will be held in Delft from March 11–18 March 2000, just preceding the World Water Forum (WWF) in the Netherlands. The project approach is discussed and to some extent determined at this first global workshop. During this workshop all UNICEF's WES and Education Officers from the participating countries will be present, as well as staff of the local organizations that support the implementation of the project. In addition staff of regional UNICEF offices take part. After the global workshop, country level workshops are held to make project planning country specific and to ensure involvement and ownership of all local stakeholders.

In the pilot countries, the focus is on the development and testing of low-cost teaching aids and technical options for the improvement of hygiene practices and environmental conditions within and outside the schools and communities. This is done with a special focus on life skills development using a child-centered approach. New in the projects is also the cooperation of the water sector professionals.

***What is necessary to improve the situation:***

Ensuring that children are healthy and able to learn is a major component of an effective education system. Good health and nutrition are not only essential inputs but also important outcomes of good quality basic education. On the one hand, children must be healthy and well-nourished in order to fully participate in education and gain its maximum benefits. On the other hand, can lead to better health and nutritional conditions for children and, especially through the education of girls, for the next generation of children as well.

The FRESH Start approach is an initiative that involves UNICEF, WHO, UNESCO, USAID, PAHO, Education International, the World Bank and the private sector. Is promotes the focusing of resources on the school-aged child and has developed a framework as a starting point for an effective health component in a broader effort to achieve more child-friendly schools. This framework includes a core of simple and familiar interventions that capture the best practices from programme experiences. These interventions, when supported by effective inter-sectoral and community partnerships, can even be implemented in the poorest schools and in hard-to-reach rural areas, as well as in more accessible urban areas. On the basis of the framework, the individual countries are expected to develop their own strategy to match local needs. The initiative will be launched at the Education for All Conference in Senegal in April 2000.

**XII. Find the odd one out (not mentioned in the text):**

1. Environmental education.
2. Right to appropriate sanitation conditions.
3. Access to necessary resources.
4. Lack of access.
5. Improvement of conditions.

**XIII. Study the place you study at.**

Give the analysis of the conditions: sanitation, rubbish, sewage, waste, wildlife, pollution, noise.

**Write down a short essay according to the plan:**

1. The place you study in (description).
2. Main environmental problems.
3. How they are solved.
4. Your proposals how to solve them.

**XIV. Discuss the following:**

***1. Health-related school policies.***

Health policies in schools can help promote the overall school health, hygiene and nutrition programme, including skills-based health education, and the provision of a variety of health services.

***2. Provision of safe water and sanitation – the important first step towards a healthy physical, learning environment.***

The school environment may damage the health and nutritional status

of school children, particularly is it increases their exposure to water and sanitation-related diseases through water supply that is not safe and through lack of proper sanitation. Hygiene education is meaningless and not realistic when not supported by clean water and adequate sanitation facilities.

***3. Skills-based health education.***

This approach to health education focuses on the development of knowledge, attitude, and life skills needed to deal with health and social issues. The development of specific psycho-social skills and the opportunity to use and practice them are central to effective skills-based health education. When individuals have these skills, they are more likely to adopt and sustain a healthy lifestyle during schooling and the rest of their lives.

***4. School-based health and nutrition services.***

Schools can effectively deliver a variety of health and nutritional services provided that the services are simple, safe and familiar, address problems that are important for the community and are recognized as important.

***5. Effective partnerships between teachers and health workers and between the education and health sectors.***

***6. Effective community partnerships.***

***7. Pupil awareness and participation.***

**XV. Read the poem and the translation. What does the author mean?**

**5 WAYS TO KILL A MAN**

There are many cumbersome ways to kill a man:
you can make him carry a plank of wood
to the top of a hill and nail him to it. To do this
properly you require a crowd of people
wearing sandals, a cock that crows, a cloak
to dissect, a sponge, some vinegar and one
man to hammer the nails home.

Or you can take a length of steel,
shaped and chased in a traditional way,

and attempt to pierce the metal cage he wears.
But for this you need white horses,
English trees, men with bows and arrows,
at least two flags, a prince and a
castle to hold your banquet in.

Dispensing with nobility, you may, if the wind
allows, blow gas at him. But then you need
a mile of mud sliced through with ditches,
not to mention black boots, bomb craters,
more mud, a plague of rats, a dozen songs
and some round hats made of steels.

In an age of aeroplanes, you may fly
miles above your victim and dispose of him by
pressing one small switch. All you then
require is an ocean to separate you, two
systems of government, a nation's scientists,
several factories, a psychopath and
land that no one needs for several years.

These are, as I began, cumbersome ways
to kill a man. Simpler, direct, and much more neat
is to see that he is living somewhere in the middle
of the twentieth century, and leave him there.

(*P.Brooke*)

## ПЯТЬ СПОСОБОВ УБИТЬ ЧЕЛОВЕКА

Чтоб человека умертвить, есть хитроумных способов немало:
вы можете его заставить, например, тащить две тяжеленные доски
к холма вершине и там его приколотить к ним. Чтоб это
должным образом проделать, нужна толпа людей,
обутая в сандальи, пенье петуха, разодранный на части
плащ, губка, уксусу немного и кто-то,
кто, молотком орудуя легко, загонит гвозди в тело.

Или вы можете взять длинный прут из прочной стали,
специально для этой цели выкованный, и штукой этой
попытаться проткнуть железный панцирь у него на теле.
Тогда потребуются: белой масти кони, английская дубрава,

скопление людей со стрелами и луком за плечами,
флаги (хотя бы два), какой-нибудь там герцог или принц,
да замок, где можно пир победный закатить.

Когда ж без рыцарских традиций обойтись, вы можете
с попутным ветром направить на него смертельный газ.
Здесь реквизит такой: бескрайние пространства жидкой грязи,
окопы и, само собой, солдатские ботинки, воронки от снарядов,
еще раз грязь и крысы – полчища крыс,
десяток залихватских песен и круглые стальные шляпы.

В век самолетов вы можете за милей милю
над жертвой, вами избранной, лететь и с нею
разделаться, нажав на маленькую кнопку. Все что
при этом надо: чтоб разделял вас океан, два
разных государственных устройства, побольше выдающихся ученых,
заводов несколько и психопат (довольно одного)
да бросовой земли избыток, ненужной на десятки лет вперед.

Все эти способы уж слишком хитроумны и хлопотны,
как я заметил выше. Куда как проще, да и чище, и вернее,–
убедиться, что человек живет в двадцатом веке (вторая
половина), и там его оставить.

(*Переклад Л.Ариштейна*)

**XVI. Draw a picture of the poem. Write a short description of your birthplace.**

**I REMEMBER, I REMEMBER**

I remember, I remember,
The house where I was born,
The little window where the sun
Came peeping in at morn;
He never came a wink too soon,
Nor brought too long a day,
But now, I often wish the night
Had borne my breath away!

I remember, I remember,
The roses, red and white,

The violets, and the lily-cups,
Those lovers made of light!
The lilacs where the robin built,
And where my brother set
The laburnum on his birthday, –
The tree is living yet!

I remember, I remember,
Where I was used to swing,
And thought the air must rush as fresh
To swallows on the wing;
My spirit flew in feathers then,
That is so heavy now,
And summer pools could hardly cool
The fever on my brow!

I remember, I remember,
The fir trees dark and high;
I used to think their slender tops
Were close against the sky:
It was a childish ignorance,
But now 'tis little joy
To know I'm farther off from heaven
Than when I was a boy.

(*Thomas Hood*)

**XVII. Continue the following:**

**How can we help the environment?**

1. One of the ways is to buy green products that do not harm the environment: recycled paper, wood from sustainable sources, organic fruit and vegetables. When they say about "recycling" they mean to take materials that have already been used, and to put them through a special process so that they can be used again. When they say about "sustainable sources" they mean that wood, for example, is from a forest where the trees can be replaced as quickly as they are cut down.

2. …

3. …

# PART III
# SUSTAINABLE SOCIETY

### How Green Are You?

1. What would you prefer for Sunday lunch?

*a) roast beef;*

*b) venison;*

*c) a nut roast with salad;*

*d) whale steak.*

2. What is global warming?

*a) something to do with the ozone layer;*

*b) an unproven hypothesis produced by scientists looking for research funds;*

*c) the heating of the earth's climate by human activities.*

3. What do you prefer?

*a) a daily bath;*

*b) a daily shower;*

*c) to save water and wash once a week.*

4. What influences you most positively when buying something in a shop?

*a) price;*

*b) attractive packaging;*

*c) a claim to be environmentally friendly;*

*d) a claim to be beneficial to health.*

5. Is your home:

*a) insulated against heat loss?*

*b) fitted with energy-efficient light bulbs or solar heating panels?*

*c) both of the above?*

*d) neither?*

6. How would you prefer to spend a weekend?

*a) going for a walk in the country;*

*b) water skiing;*

*c) attending the Green Party conference.*

7. How do you travel to work or school?

*a) by car;*

*b) by public transport;*

*c) by bicycle or on foot.*

8. What do you recycle?

*a) newspapers;*

*b) bottles;*

*c) both of the above;*

*d) nothing.*

9. How do you feel about the future?

*a) what's the problem?*

*b) we'll have to make some big changes;*

*c) the world is coming to an end because human beings are greedy and thoughtless.*

10. Which policy is most important?

*a) combine economic development and environmental protection;*

*b) stop people in developing countries having too many children;*

*c) half economic growth and industrialization.*

11. What should happen to poachers who kill rhino, elephant and other endangered species?

*a) train them for a useful job;*

*b) shoot them;*

*c) nothing;*

*d) give them long prison sentences and heavy fines.*

Add up your score:

| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | 0 | 1 | 0 | 1 | 2 | 2 | 0 | 2 | 2 | 2 | 2 |
| **B** | 2 | 0 | 1 | 0 | 3 | 0 | 2 | 1 | 2 | 0 | 4 |
| **C** | 4 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| **D** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

0–10 There's no hope for you at all – or our planet if you're in charge!

10–19 You've absorbed a bit of the green message, but you're still part of the problem rather than the cure.

20–29 Glad to know you. You're obviously a caring person.

30–39 You may be feeling pretty self satisfied. But your extreme, doom-laden dark greenery puts everyone off.

**Discuss your findings first with your partner, then have a big group sharing.**

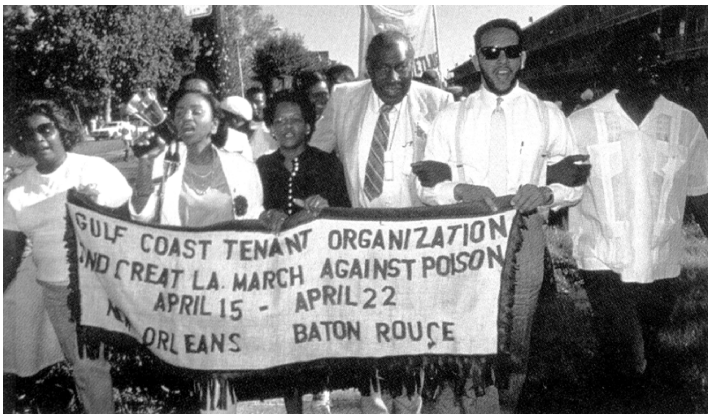
Our life is twofold: Sleep hath its own world
A boundary between the things misnamed
Death and existence: Sleep hath its own world,
And a wide realm of wild realty,
And dreams in their development have breath,
And tears, and tortures, and the touch of Joy.

(*The Dream. George G. Byron*)

**I. Warm up questions:**

1. What is sustainable society for you?
2. What is the environmental situation in the world?
3. How does industrial and agricultural revolution influence on the nature?
4. Do you feel protective from pollution?
5. What kind of world will you leave for your children?
6. Are there any organizations or movements that fight for the environment?
7. Are there any ways to save our planet?

See Picture 4.




Picture 4

**II. What kind of a world do you want to live in? Use the expressions from the box.**

| | | |
|---|---|---|
| I consider… | In my opinion… | would like… |
| It would be great… | As for me… | My wish is… |
| I think… | My dream… | I am certainly want… |

**III. Study these words and expressions:**

**A** aquifer, atmosphere, area;
**B** balancing;
**C** circulate, conservation, chemicals, consequences, consume;
**D** discharging, disruption, damage, depleting, dumping;
**E** extinction, ecological system, environment (damage), eroding, experts;
**F** farming;
**G** groundwater wells, garage, green group;
**H** harmful (chemicals), households, human beings, health;
**I** irrigating, industrialization, inhabit;
**J** jeopardizing;
**L** limited resources, landscape;
**M** movements, mining;
**N** natural cycles, natural resource;
**O** overpopulate, ozon layer, overpumping;
**P** population, protection, pesticides, poison chemicals, pollution control laws, planting, prevent;
**Q** (water)quality;
**R** reservoirs, releasing, recycling, renewable energy, resources, regenerate;
**S** sustainable development/society, saving, speceis extinction, survival;
**T** treat(ment), technology, toxic wastes sites;
**U** utilizing, untappen supply;
**V** visual pollution;
**W** wasteful economy, wealthy countries, wastewater, wildlife.

**IV. Read the text and discuss the questions:**

*What kind of a world do you live?*
*What are consequences of the ecological systems breakdown that support life on Earth?*
*Are there any ways to improve the situation?*
*Is the world population increasing a serious problem?*

The state of the environment is extremely serious. In spite of improvements in certain areas, the situation as a whole is continuing to deteriorate. It would be irresponsible to delay drastic measures any longer.

Radical decisions, which will affect everyone, are unavoidable. Not only the improvement of environmental quality, but also the very survival of mankind is at stake. Unless we set a different course quickly and resolutely, we are heading for an environmental catastrophe. The only way to avoid it, is to lay a basis now for sustainable development.

Today more than 5,6 billion people are using (and are often abusing) the Earth's natural resources. In every corner of the world people are cutting forests, digging out minerals and energy supplies, eroding earth, polluting the air and water, creating dangerous waste, and destroying natural areas faster than ever before in the history, of life on Earth. It is becoming impossible to escape the results of serious environmental damage: species extinction, spreading deserts, pesticide poisoning, increasing public health problems, poverty, starvation and death. Many experts think that we will soon begin to see a breakdown of the ecological systems that support life on Earth.

Around the world, people first started thinking seriously about environmental problems, in the 1970's. Since that time many governments have made laws to protect the environment, but still, problems have got worse in many parts of the world.

Environmental regulation has grown in direct propotion to environmental awareness. There has been an explosion of international treaties and protocols, European laws and domestic legislation concerned with the environment. But regulation is no good without enforcement. It is efficacy of the enforcement mechanisms which proves the value of the regulation.

This problem can be resolved at national level by funding enforcment agencies and ensuring they have adequate resources to function effectively within a socially acceptable prosecution framework. Yet, even at this level, problems can arise where a set of laws are new, little understood and perceived as economically disadventageous by the revelant industry. Seldom do intenational trearies have the force of law in the same way as national laws. Laking enforcement mechanisms and an effective forum for dispute resolution, they epend haevily on the consensus and goodwill of the participating countries. Yet, it is trite to state that pollution does not recognise national boundaries. From a geografical and a political perspective, there is a need for an effective world court for the environment and a woald policing agency given the nature of pollution and the economic organisation of the corporations which dominate global trade.

The agricultural and industrial revolution of the last hundred years has caused the world population to increase by over ten times. If it continues to grow at the present rate, the population will double in about 40 years. How many people can the Earth support life for? Some experts believe the world is already overpopulated, other scientists say the Earth can provide a very simple life for about 20 billion people. But that would require farming all land and everyone existing on a diet of only grain.

Although developed countries have a small part of the world's population, they use far more energy and resources than developing countries. This large amount of resource use results in a mere comfortable life style. A person living in a developed country uses in six months the resources that have to last a person living in a developing country his whole lifetime. Many former socialist countries like Ukraine also use large amounts of energy and resources, but their level of life comfort is not very high because of a very wasteful economy. A new model of social development is needed to avoid a crisis. This model is called sustainable development in which natural resources are not used faster than they can be regenerated by the Earth. Here are several changes that are necessary to make our society more sustainable: slow the world population growth, reduce the waste of resources, reduce the amount of pollution recycle and reuse resources, and use more renewable energy sources like sun, wind and water.

**V. Read the text again and find the answers to the following questions:**

1. What do people do to destroy the environment?
2. Why is it becoming impossible to escape the results of serious environmental damage?
3. How can people avoid the environmental crisis?
4. What changes do we have to do to make our society more sustainable?
5. What is the sustainable society?

**VI. Match up words on the left with the definitions on the right.**

| | |
|---|---|
| The environment | Damage caused to the environment by harmful chemicals or waste. |
| Sustainable | To keep someone or something safe from harm, damage, illness. |
| Pollution | Able to continue over a period of time |

| | |
|---|---|
| Renewable energy | To take materials that have already been used, and to put them through a special process so that they can be used again. |
| To recycle | The air, water, and land where people, animals, and plants live, and the way all these things depend on each other so that life can continue. |
| To protect | Sources such as wind power, wave power, and solar power that do not pollute the environment. |

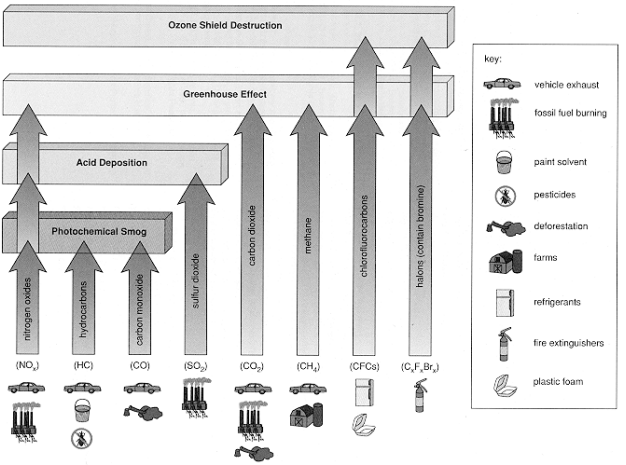
**VII. Work in pairs and discuss your answers to the questions:**

1. What is environmental pollution?
2. What kinds of pollution do you know?
3. What are the reasons of environmental pollution?

**Put down your answers to fill in the table.**

| Kinds of environmental pollution | Sources of environmental pollution |
|---|---|
| Water pollution | |
| Land pollution | |
| Air pollution | |
| Thermal pollution | |
| Noise pollution | |
| Radiation pollution | |

**VIII. Comment on the information about air pollutants (see Picture 5).**




Picture 5

**IX. Think about the problems of environmental pollution and your future in the polluted world. Complete these sentences:**

1. If we want to remain within the norms for environmental pollution, then…
2. Intervention by man into environment has disrupted…
3. Local problems can…
4. The higher the scale level of pollution…
5. Sustainable development can help…

**X. Read the text. What characteristics of sustainable society are mentioned in it?**

## CONCERN FOR TOMORROW

"If we want to remain within the norms for environmental pollution, then reductions of 70–90 percent are required. This is beyond the capacity of most of the end of pipe-technologies that we know about."

Anominous statement but a solidly grounded one. It was taken from the summary of the well-known report "Concern for Tomorrow" which was published in late 1988. This study has received a great deal of attention and deservedly so. Never before has there been such a complete, scientifically based picture presented of the long-term environmental developments that we can expect in the Netherlands. Numerous universities and institutions contributed to the research.

The report presents the environment as a system of reservoirs and natural cycles of all sorts of substances which circulate within and between these reservoirs. Intervention by man has disrupted many of these processes profoundly. In order to promote understanding of the system and of the consequences of these disruptions, "Concern for Tomorrow" distinguishes five levels of scale: local (the developed environment), regional (the landscape), fluvial (the basins of rivers and coastal seas), continental (air and ocean currents), and global (the higher air layers). Each level has its "own" problems, yet they all affect each other. Local problems can contribute to problems at "higher" levels. And conversely, global problems have effects all the way down to the local level.

The higher the scale level, the longer it takes before these problems become clear. But also: the more difficult it is to do something to counter them and the longer it is before such counter-action has an effect.

**XI. Work in pairs. List all the environmental problems you know and classify them, in the following way (Table 5).**

*Table 5*

| Problems | Solved by the man | Solved by the government | Solved by several countries |
|---|---|---|---|
| Local | | | |
| Regional | | | |
| Fluvial | | | |
| Continental | | | |
| Global | | | |

**XII. Read and find the following words in the text and give their translation, synonyms: manufacturing, industries, industrial water, industrial recycling, releasing, conservation, investments, households, wastewater, protecting.**

## INDUSTRIAL RECYCLING

Collectively, industries account for nearly one-quarter of the world's water use. In most industrial countries, they are the biggest user – frequently accounting for 50–80 Vo of total demand, compared with 10–30 Vo in much of the Third World. As developing countries industrialize, however, their water demands for electric power generation, manufacturing, mining, and materials processing are rising rapidly.

In contrast to that used in agriculture, only a small fraction of industrial water actually is consumed. Most of it is utilized for cooling, processing, and other activities that may heat or pollute water, but do not use it up. This allows a factory to recycle its supplies. American steelmakers, for example, have reduced their water intake to 14 tons per ton of steel, securing the remainder from recycling.

So far, the main impetus for industrial water recycling has come from pollution control laws. Most of the world's wealthier countries now mandate that industries meet specific water quality standards before releasing wastewater into the environment. The most effective and economical way to comply with these requirements often is to treat and recycle water, thereby discharging less. Pollution control laws, therefore, not only have helped clean up rivers, lakes, and streams, they have promoted conservation and more efficient water use.

Given the proper incentives, industries of many types have shown they can cut their water needs 40–90 Vo with available technologies and practices, while at the same time protecting water from pollution. Industrial conservation offers cities facing shortages a large untapped new supply. Ensuring that new factories incorporate conservation and recycling from the outset would help delay costly investments in urban water supplies, reduce overpumping of aquifers, lessen competition for water, and help prevent pollution from reaching levels hazardous to people and wildlife. Closing the industrial water and wastewater cycle not only is technically possible, it increasingly makes good economic and environmental sense.

Homes, apartments, small businesses, and other municipal enterprises account for less than one-tenth of the world's total water use. However, their demands are concentrated in relatively small geographic areas, and in many cases are escalating rapidly. As cities expand, they strain the capacity of local water bodies and force engineers to reach out to ever more distant sources.

In addition, the reservoirs, canals, pumping stations, pipes, sewers, and treatment plants that constitute a modern water and wastewater system require huge sums of money to build and maintain. Collecting and treating water and wastewater also takes large amounts of energy and chemicals, adding to environmental pollution and the over-all costs of a community's water system. Under such constraints, many cities are having difficulty meeting the needs of their residents, and large numbers of low-income households in developing countries get no service at all.

Conservation, once viewed as just an emergency response to drought, has been transformed in recent years into a sophisticated package of measures that offers one of the most cost-effective and environmentally sound ways of balancing urban water budgets. Just as energy planners have discovered that it often is cheaper to save energy than to build more power plants, water planners are realizing that an assortment of efficiency measures can yield permanent savings and thereby delay or avert the need for expensive new dams and reservoirs, groundwater wells, and treatment plants. The idea slowly is spreading that managing demand, rather than continuously striving to meet it, is a surer path to water security while saving money and protecting the environment at the same time.

**Define what *INDUSTRIAL RECYCLING IS …***

**XIII. Agree or disagree with the following statements. Explain why.**

1. Raising water prices often can be politically difficult to do.
2. It is necessary to charge people appropriately for their water use.
3. Collecting and treating water and wastewater also takes large amounts of energy and chemicals.
4. It often is cheaper to save energy than to build more power plants.
5. The reservoirs, canals, pumping stations, pipes, sewers, and treatment plants that constitute a modern water and wastewater system require huge sums of money to build and maintain.
6. Large numbers of low-income households in developing countries get good service.
7. Industrial water recycling is not under pollution control laws.
8. Closing the industrial water and wastewater cycle not only is technically possible, it increasingly makes good economic and environmental sense.
9. Collecting and treating water and wastewater does not take large amounts of energy and chemicals.
10. Pollution control laws, not only have helped clean up rivers, lakes, and streams, they have promoted conservation and more efficient water use.

**XIV. Continue the following using these words: human needs, environment, to survive, natural resources, visual pollution.**

**Add at least ten sentences. Read it to the class.**

## HUMAN INFLUENCES

Human beings are very powerful animals. They are able to change any environment that they want to. They are the only animals able to do this. These changes may be for the good, such as planting new forests, or by providing water to irrigate the fields in the driest parts of the world.

But a great deal of what they have done in the past or what is happening now, is changing the ecology of the environment. Smoke from factory chimneys and power stations may pollute the atmosphere and land. It is also using up the world's natural resources very quickly and they cannot be replaced. …

**XV. Sustainable ecology is also the study of plants and animals in their surroundings. You can't study them properly unless you go and look at them outside, in their natural habitats. There are a number of rules that should be followed. Complete these rules using these hints:**

**THE GOOD ECOLOGIST`S GUIDE**

*1. Putting things back*:

If you move rocks or logs, always roll them back carefully to where they came from.

…

*2. Watch where you stand*:

Be careful where you stand. It is very easy to tread on plants you haven't noticed because you are trying to look at something else.

…

*3. Keeping animals*:

Don't put animals too close to a source of heat.

…

*4. Remember*:

It is illegal to collect birds' eggs.

…

**XVI. Read the following texts and decide which of these headlines would be the best for them:**

***A Planet in Jeopardy.***
***Creating a Sustainable Society.***
***Winning Battles, but Losing the War?***

The effort required to create a sustainable society is more like mobilizing for war than any other human experience. Time itself is the scarcest resource as we begin preparing for the struggle that will unfold in this decade and beyond. Indeed, we have only a few short years to overcome the political, social, and economic impediments to real progress – to lay the foundations for a fundamentally improved society. Once the self-reinforcing trends of environmental degradation and deepening poverty are too deeply established, only a superhuman effort could break the cycle and reverse the tend.

The first step – waking up to the dimensions of the world's environmental problems – has in a sense been under way for more than two decades. At the global level, milestone was the U.N. Conference on the Human Environment held in Stockholm, Sweden, in 1972. The 20 years

since that meeting have seen the birth of a worldwide environmental movement, the emergence of thousands of grass-roots environmental organizations, and the proliferation of environmental laws and regulation in nations around the world.

Now, dozen of corporate executives have declared themselves committed environmentalists. And more than 115 nations have establish environment agencies or ministries since 1972.

Laws and ministries agree one thing. Real environmental progress is another. The two decades since the Stockholm conference have seen only scatted success stories. The Cuyahoga River in Cleveland, Ohio, no longer catches fire, and swimming has resumed in some of the Great Lakes. Air quality has improved in Tokyo and in many northern European cities as well. Soil erosion has slowed on U.S. cropland.

National governments have focused on building water-treatment facilities, controlling air pollutants from power plants, cleaning up toxic-waste sites, and trying to find new places to put their garbage. While much of this is necessary, such efforts cannot by themselves restore the planet's environmental health. Stabilizing the climate, for example, depends on restructuring national energy policies. Getting the brakes on population growth requires fundamental changes in social values and services. So far, only a handful of countries have undertaken such initiatives.

***Environmental dispute resolution in the European Union.***
***A way to protect the environment.***
***The EU environmental policy.***

It is insructive to consider the European Union as a model for the management of environmental agreements. The EU is a supranational organisation with different institutions for the democratic control of its business, the execution of its policies and the juridicial determination of disputes. It has a Commision which acts a civil service, a Council and Parliament which represent the interest of the citizens of Europe.

How does Europe control environmental disasters and environmental degradation? As a law making body, directives and regulations relating to the environmental issues are passed by the Council and Parliament. The scope of such environmental laws neds no introduction. The framework directives provide controls on every aspect of the environment includung water quality, waste and atmospheric pollution, and further directives provide detailed controls on emmisiions, etc. The range of laws

pessed at European level are comprehencive, detailed and compulsory. Each of the fifteen member states have no option but to implement those laws into their national legal systems.

The newly formed European Environment Agency intended to act as a policeman. Its role will indeed be helpful in the enforcement context in that it will provide a forum fore the collation of information regarding implementation as well as developing a sceintific base, but its function is to be that of a database rather than an enforcement agency.

This represents probably one of the best examples of multi-state co-operation and enforcement. It can be also seen as a multi-state union of first world countries with relatively like-minded and sophisticated approaches to the protection of the environment.

***Environmental Business.***
***New Steps in a Global Environment Systems.***
***Impoving Global Markets.***

Battelle formed a global environment systems and technology business to serve customers in four rapidly growing markets – environmental restoration, waste managment, environmental systems planning, and basic and applied environmental research.

The new global business integrates Battelle's environmental resources at labs in Columbus, Ohio; Richland and Sequim, Washington; Duxbury, Massachusetts; Frankfurt, Germany; and Geneva, Switzerland. The business potentialy represents annual revenue of $400 million.

"We have consolidated and integrated Battelle's worldwide environmental resources to better serve customers across the full cycle of environmental activities and needs," says William J.Madia, corporate senior vice-president, who has been named to lead Battelle's global environmental business. "We want to add value to our customer by solving their complex environmental problems and assisting them in avoiding future environmental difficulties.

Global markets are telling us that risk-based integrated technical, economic, regulatory, and instutional solutions are very much in demand. And there is clearly a movement toward full-swervice, solution-oriented programs. Bettelle intends to meet these market needs".

**XVII. Translate the following text. Time – 25 min.**

**A MODERN THOREAU WITH SHARP ELBOW**

He's been called this generation's John Muir or Henry David Thoreau. As an uncompromising champion of the environment, David Brower has,

in fact, become one of the most Influential people in the modern history of the environmental movement.

It's a stubborn attitude that has gotten him nominated for three Nobel Peace Prizes, and helped transform the Sierra Club from a group concerned mainly with providing weekend hikes to one with considerable clout In Washington. More than anyone else, he has pioneered the concept of citizens writing elected officials, attending public meetings, buying coffee-table picture books to support preservation, and taking edgy stands on green Issues.

Brower's passion for nature began early, before he fought In Italy during World War II with the storied 10th Mountain Division, a special combat unit of the Army trained to flight on skis. That experience, however, solidified his affinity for the mountains, and when he came home he became an activist. Before rock climbing became popular, Brower made 70 first ascents In his beloved Sierra Nevadas. Reverence for the natural world has often led Brower to take controversial positions – some viewed as antihuman. He maintains, for example, that there are simply too many people on the planet, living In the wrong places, crowding out other species and depleting limited resources. As a result, he's also staked out a tough stand against high levels of immigration, saying the flood of people into the Southwest is putting too much pressure on stressed ecosystems. It's led to charges of racism and intolerance. But many people who know Brower refute those allegations. "Those who try to diminish his effectiveness portray him as a radical environmentalist who is anti-people, which isn't true," says Mikhail Davis, who oversees The Brower Fund, which supports grass-roots conservation efforts. "No one who has ever met or known him thinks of Dave that way." Ironically, some of the fiercest attacks on Brower over the years have not come from industry but from other green groups. In recent weeks, Brower has drawn flak from conservation-minded Democrats for supporting Green Party candidate Ralph Nader. Brower says as a conservationist, loyalty is not owed to a party, but to the candidate who will do what Is right for the land, air, and water, and the species inhabiting them.

**XVIII. If you have a chance to write a report named "Concern for Tomorrow" what will you write about. Make a plan and then share your ideas with other students.**

# PART IV
# WILDLIFE CONSERVATION

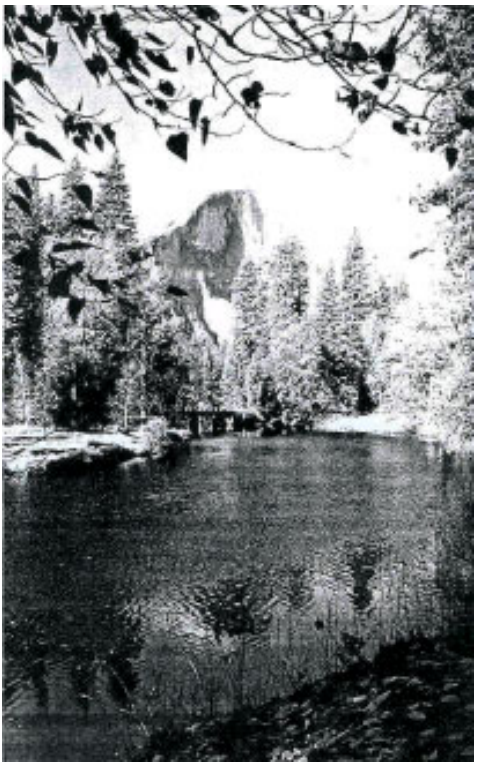
Wildlife conservation – the protection of natural things such as animals, plants, forests, etc., to prevent them being spoiled or destroyed.

(*World Book*)

**I. Work in groups and discuss the questions:**

1. What do you think is described here?
2. Have you ever been to any national park?
3. What animals and plants have you seen there?
4. What national parks do you know, and where are they situated?
5. What are national parks established for?

(See Picture 5)



Picture 5

**II. Study these words and expressions:**

**A** Agriculture, air, aquatic park, artificial, amphibian

**B** Biosphere, burn, ban, boundary, bog, breed, bolt, beast, beach, bank, bay, boulder, bedrock, bluff, bush, beam, batholite, botanical reservation

**C** Conservation, condition, cause, current, cedar, community, carnivorous, clearing, crop, coniferous, cave, cliff, crust, contaminate

**D** Diversity, dump, depth, deplete, deteriorate, damage, desert, deer, deep, dry, dwelling, dune, dormancy

**E** Ecology, endangered, environment, exist, eliminate, erode, erosion, extinction, elk, exhaust, expand, explosion, ecosystem, eagle, ebony, erupt, enthrophy, edge, erratic

**F** Fertility of soils, fishery, forest, forage, fire, field, fortuitous, feature, feed, fur seal, fauna, flora, flower, fossil, fee, fumes, freshwater, frost, field, flow

**G** Grassland, grove, graze, game, geyser, ground, gorge, glacier, gulf, grave, grow

**H** Hunt, herd, hydrogen, hold, hawk, habitat, harm, humpback, harvest, humid, hollow, herb, humus, hiking

**I** Insecticide, intrinsic value, intrusion, icicle, ice, iron, impact, insectivorous,

**J** Join, jam, jumper

**K** Kane, karst

**L** Livestock, land, lynx, log, lake, lumber, lawn, lodging, landscape, lowland, layer, limestone, locate, leach, lion

**M** Maintain, mercury, marine, mountain, mammal, menace, movement, multiple use, mahogany tree, mobile, migratory, moose, meadow, mining, melt, mushroom, moss, marine park, migmatite

**N** Nature, nutrient, nuclear, national park, natural habitat, nature reserve

**O** Oxygen, origin, oriental, orchid

**P** Preserve, perpetuate, plant, pollution, prevention, precipitate, pest, pesticide, population, predator, pine, poacher, prohibit, pool, periwinkle plants, peat

**Q** Quarry

**R** Resources, restoration, recycle, reduce, rooted, refuge, reason,

research, remove, root, reproduce, rare, redress, rainbow, ranger, ridge, rout, resort, relief, rot

**S** Species, sustain, soil, survival, sulfur, spread, sacred, settled, surround, space, science, slate, soar, stream-flow, swamp, sanctuary, site, sign, sponsor, seal, slaughter, skin, scenery, sparkle, snow, stone, superintendent, surface, spoil, south, sand, smoke, stream, sphagnum, sun dew, salt, slope, sandur

**T** Tribe, treaty, timber, trap, trade, teak, tree trunk, tease, trove

**U** Urban, undulating,

**V** Vegetation, volcano, vanish, violate

**W** Wild land resources, waste, wood, wildlife refuge, whale, warfare, wolf, watershed, waterfall, wind, wilderness, wonder, wet

**Y** Yield

**III. Choose the words denoting…**

a) types of scientific reserves;
b) names of animal and plant species;
c) types of landforms.
Fill in Table 6. Compare your table with your group-mates' tables.

*Table 6*

| Types of scientific reserves | Names of animals and plants species | Types of landforms |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**IV.**

**Read and give the answers to the questions. Give the definition of "conservation".**

***What are the objectives of conservation?***

Although the idea of conservation is probably as old as the human species, the use of the word in its present context is relatively recent. Over the years conservation has acquired many connotations: to some it has meant the protection of wild nature, to others the sustained production of the materials from the resources of the Earth. The most widely accepted definition, presented in 1980 in "World Conservation Strategy" by the International Union for the Conservation of Nature and Natural Re-

sources is that of "the management of human use of the biosphere so that it may yield the greatest sustainable benefit maintaining its potential to meet the needs and aspirations of future generations". The document defines the objectives of the conservation of living resources as: maintenance of essential ecological processes and life-support systems, preservation of genetic diversity, and guarantee of the sustainable use of species and ecosystems. More generally conservation involves practices that perpetuate the resources of the Earth on which human beings depend and that maintain the diversity of living organisms that share the planet. This includes such activities as protection and restoration of endangered species, the careful use of energy resources, and the sustainable use of soils and living resources.

Conservation is based on knowledge of ecology, the science concerned with the relationship between life and the environment, but ecology itself is based on a wide variety of disciplines, and conservation involves human feelings, beliefs, and attitudes as well as science and technology.

***Why is it important to conserve nature?***

Conservation is essential for human survival. Life depends upon the proper functioning of the biosphere – the narrow zone of air, soil, water and rock in which all life on the Earth exists. So the purpose of conservation is to maintain the biosphere in the proper operating condition. Although it is known that green plants supply oxygen in the atmosphere, that plants and animals recycle nutrients, and that the plants and animals maintain the fertitlity of soils, many of the elements that contribute to the proper functioning of the biosphere have not yet been identified. That is why the attitude of care and protection toward the Earth's living resources is necessary. Such aspect of conservation as prevention of polution has an immediate importance. There are a lot of examples of serious effects of pollutants in air, water or soil on human health and survival: the atmosphere of sulphur dioxide in London in 1950's led to many deaths; dumping of mercury-containing water in waters around Japan caused the death of many people and destroyed the health of others.

***What are the values of conservation?***

The economic value of conservation is sometimes difficult to demonstrate. Although the floating plants of the ocean, the microscopic phytoplancton, are of little direct economic value to people, their elimination from the food chain would destroy the world's marine fisherier, that are a major source of human food and even the world's oxygen supply

would be severely depleted. A lot of farms are exploited, eroded and abandoned; forests are cut, burned and allowed to deteriorate.

Wild nature may be appreciated as the source of aesthetical pleasure. The use of wildlands and wild-animal resources for recreational enjoyment is recognized as one of the important values of conservation. Outdoor recreational activities, such as fishing, hunting, boating, swimming, picnicing, sunbathing, hiking and skiing are connected with the existance of natural and near-natural environments such as sites for these activities. Psychological and sociological importance of aesthetical and recreational values may vary from one culture to another. But it has become attractive to governments and private investors to provide opportunities for that exploit of outdoor recreational resources.

Conservation is also of great scientific value. Scientists know relatively little about the past, present and future of the biosphere. So it is necessary to maintain natural outdoor laboratories, including areas of undisturbed nature in order to conduct studies needed to acquire knowledge. There are many natural resources with undiscovered scientific and technological values. If, for example, all apparently worthless rosy periwinkle plants had been destroyed, an important drug used in treating leukemia would not have been discovered. Because every plant and animal contains a storehouse of genetic and biochemical information that could that could have great value for the mankind's welfare and survival.

**Work in groups. Discuss the values of conservation. Which is the most important? Why?**

**Write a paragraph expressing your own opinion on the importance of the value of conservation you have chosen. Be ready to read it to the class and defend your point of view.**

**V. Read the text and devide the history of conservation into periods.Give the name to every period. Charachterize every period.**

## SOME FACTS FROM THE HISTORY OF CONSERVATION

For most of its history, the human species has lived by hunting wild animals and gathering wild plant foods. It can be suggested that the relationship of hunter-gatherers with nature was relatively benign, people received a remarkable amount of knowledge about plants and animals with which they associate and on which they depend. A number of modern medicines have come from traditional tribal cultures when medicine was

made of different wild plants. It is also known that in prehistoric times people did modify their natural environment. Many grassland areas throughout the world have come to exist because people used fire as an aid to hunting or modify vegetation to make it more suitable for their needs. Early hunting and gathering cultures contributed to extermination of some animal species. But this seems to have been more of an exception than a general practice. We can suggest that the early humanity lived in an equable balance with the natural environment. If they had done serious damage, people could not have survived. With urban life came pressure upon the natural environment and upon agricultural lands that was sometimes excessive. There is widespread evidence of serious soil erosions during ancient times. Destruction of vegetation and the spread of deserts followed the rise of early urban civilizations.

Certain conservation practices developed in early civilizations. Some species of animals were protected by religious taboos; religious sanctions prevented destruction of forest groves and sacred mountains. The use of organic fertilizer to maintain soil fertility is found among many more recent primitive peoples and has had a long history in Western Agriculture. The Bible is filled with various injunctions governing the use of land and resources that have a conservation function.

The Phoenicians and the Incas civilizations developed techniques of terracing to prevent soil erosion on hillsides and to make more effective use of water for irrigation. The earliest civilizations also created reserves or parks to protect wildlife or natural areas. There were hunting preserves for the use of the royalty but they also served a conservational function.

The written description of Roman agriculture showed the improvement of land-use practice. The well-tended irrigated fields and gardens were developed during the height of Muslim culture. Great skill was achieved in conservation of soil resources in Western Europe, Japan and China in the pre-industrial period. Irrigated lands in the Nile valley and volcanic soils in tropical Southwest Asia have been kept fertile and productive over thousands of years.

It must be admitted that concern over wild nature wasn't widespread in pre-industrial times.

Starting with the voyages of discovery in the 15$^{th}$ century the influence of European culture was spread over the world. By the 17$^{th}$ century Europeans were equipped with a powerful technology and could modify large areas of the Earth and subdue less aggressive peoples. During this period the attitudes of explorers and colonists were oriented more toward

immediate personal aggrandizement of the lands they settled than toward any concern for the long-term productivity of the newly discovered countries. The spread of European civilization was accompanied with soil erosion and the destruction of natural vegetation and wildlife in America, Australia and Africa. Nevertheless, during the same period, various conservation ideas and practices were being promoted. Forest conservation was developed in the early 17th century in England and France. In the 18th century in North America Thomas Jefferson put forward ideas for land management and conservation and a general interest in and concern for wildlife was developing.

The 19th century witnessed unusually severe environmental degradations. In Australia live stock populations were allowed to increase to levels far above what the natural forage could support. In Africa many forms of wildlife were hunted to extinction and most of the larger mammals were reduced to numbers that endangered their survival. In North America however the changes were most dramatic. The great herds of wildlife that inhabited the plains and prairies vanished as the numbers of bison, elk, antelope, and deer were reduced by hunters. Logging and fires combined to menace the once luxurious forests of New England, the states surrounding the Great Lakes, and the South. The grasslands were overgrazed, and in some areas such as California native vegetation was eliminated over most of its range and replaced by species of European and Asian origin.

By contrast, in the long-settled areas of Europe and Asia changes were much less marked as conservation – oriented systems of land management persisted.

The main features of the recent history of conservation are a great expansion of government roles in protecting the environment and a growth of public interest in and support for this process. National park systems dedicated to the preservation of wild nature and to the provision of outdoor recreation space, has grown rapidly. Natural – forest systems, dedicated to the multiple use of wild – land resourses, have also become established. In the US the conservation of wildlife became a cause of national interest. A system of wildlife refuges was established. On private and on public – domain lands deterioration continued and it became widely recognized that many privately farmlands had been depleted or exhausted. Firm control over management of lands in the public domain to establish soil conversation was accepted as appropriate activities for the national government.

Conservation ideas spread widely. By the 1920s national parks were to be found on all continents. In 1924 the Soviet Union established the first of its national reserves (zapovedniki). Conservation – oriented management of forest lands also became more widely accepted throughout the world. The scientific basis for the management of wild grazing lands for the sustained production of forage for livestock was spread all over the world. Aldo Leopold in the US in 1933 wrote a textbook on game management. This book focused on the conservation and management of wild animal life for such purposes as sport hunting and fishing on a sustained basis.

**2. Work in pairs. Discuss the reason and objectives of the conservation of nature during the history of mankind.**

**VI. Read the text. What are the aims of the conservation of nature put forward by the environmentalists?**

## CONSERVATION MOVEMENTS

The modern conversation movement didn't have its beginnings in the settled of the Old World, but in the New World where, within the memory of a single generation, there had been extreme changes in the landscape and in the abundance of wildlife. The reaction to the destruction of natural resources precipitated the formation and growth of the conservation movement. In 1832 George Catlin, a U.S. artist and author, first proposed the idea of national parks in which Indians and wild country both be preserved. A little later, the writers Ralph Waldo Emerson and Henry David Therein presented strong arguments concerning the importance of the continued survival of wild nature to the psychological well – being of mankind. The first book on conservation, "Man and Nature", by George Perkins Marsh, appeared in the 1860s. In the same period the author and naturalist John Muir became a leading advocate of wilderness preservation. He was a founder of the Sierra Club. In 1872 the US Congress proclaimed the Yellowstone region as a natural park. Conservation as a national movement owes much to President Theodore Roosevelt. Roosevelt's chief forester, Pinchot, was the first who used the term conservation in its presented context. Pinchot was the leader of the nation's Forest Service and advocated a utilitarian, "wise use" approach to conservation.

**VII. Read and answer the following questions:**

*What are the problems of conservation?*
*What are the new approaches to conservation?*

After World War II the field of conservation expanded as new problems arose and as some older approaches became inadequate. The population had grown and pressures on land and resources had increased. So it was impossible to take into account only a single factor or a few factors when planning the use of land and resources. For example, in some countries where the insecticide DDT was used to control malaria-bearing mosquitoes, the disease was reduced to a low level. Similarly, agricultural pests were drastically reduced and crop yields soared in many regions. Eventually however, it was discovered that the pesticides had unexpected and severe consequences on the environment, and by the 1970s there use anywhere for any purpose was open to serious debate. In 1972 DDT was banned.

After World War II all forms of pollution became a matter of serious significance because populations and industrial activities increased. Air in major cities became toxic, water supplies were contaminated. Nuclear radiation has become a major cause for concern by the 1950s and early 1960s, when it was found that radioactive materials from test explosions of atomic and hydrogen bombs spread throughout the entire biosphere instead of being confined to the immediate areas in which the tests were conducted.

As it was necessary to have an integrated approach to environment problems and to natural – resource management, many countries established ministries for the environment or their equivalent. In 1969 the U.S., by the National Environmental Policy Act, established a national Council on Environmental Quality to oversee and coordinate those activities of government departments that could have an effect upon the environment.

By 1970 the problems of the environment had become international in scope. The oceans were seriously polluted, and no single country could control the situation. Pesticides and other toxic materials spread by air and water currents throughout the world were causing environmental damage everywhere. It was necessary to control the use of radioactive materials, heavy metals, toxic pesticides, or the dumping of petroleum at sea, and to regulate the exploitation of marine resources. But such control and regulations were ineffective without international authority.

In recognition of these problems, many international conferences were

held, new treaties and conventions were proposed. The need for regulatory power over the environment at an intergovernmental level was stated. The World Health Organization and the World Meteorological Organization began a global program to monitor pollution levels. The UNESCO launched a major scientific program directed toward the problems of "Man and the Biosphere". An international conference on environment problems was held in Stockholm in June 1972. The United Nations General Assembly established the UN Environment Program (UNEP) to act on the recommendations of the Stockholm meeting. In 1980 International Union for Conservation of Nature and Natural Resources, with the support of UNEP and the World Wildlife Fund, published "World Conservation Strategy". This document, which presented world with strategies for the rational use of resources, has served as the basis for many national conservation plans. But many critics say that if the nations of the world had delegated greater authority to international organizations and had supported them financially more progress towards the solution of global problems world have been expected. In existing conditions of international relations each nation must do everything possible to preserve nature within its own boundaries.

**2. Write down a paragraph and be ready to report it to the class:**
*about the environmental problems in the modern world;*
*about international efforts undertaken to overcome these problems.*

**VIII. Read the text and fill in the table (`Table 7).**

*Table 7*

| Types of reserves | Their features | Their objectives |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## NATURAL COMMUNITIES

The idea that biologic communities should be protected for their own intrinsic value is of relatively recent origin. Although natural communities have been protected since ancient times, the reasons for doing so have not been related to the value of the community per se but to some special features that was of value to people. Thus, hunting preserves were

protected in ancient Mesopotamia, in China and in England, where the New Forest was set aside by William the Conqueror. Such preservs protected natural areas, but their major purpose was to provide a setting for royal hunting. Temple gardens have been preserved over the centuries in China and Japan; the cedars of Lebanon were maintained around holy places. But such preservation was fortuitous rather than intentional. The idea of preserving wild areas for their own value had its origin in the Unites States with Catlin, Thorean, Muir and others. This concept has been accepted in other countries but more slowly. Appreciation of wild nature is acquired with scientific knowledge, particularly ecological knowledge. The concept of preserving wild nature for its own value has become widely accepted but the means of implementing it are not necessarily available in every country.

Natural communities, little affected by human activities, are thought to be worth preserving for a variety of reasons.

First is the scientific benefit. From studies of undisturbed ecosystem much can by learned about the functioning of the biosphere.

There are aesthetic and recreational values attached to wild areas and wildlife. Outdoor activities in a natural setting or contact with plants and animals in a wild state are important to psychological well-being.

The International Biological Program, a worldlife research effort, has focused attention on the many kinds of natural communities that require protection. The International Union for Conservation of Nature and Natural Resources, a semigovernmental international agency, devotes an important part of its activities to the establishment of reserves and parks for the protection of natural communities. The United Nations, through its Food and Agricultural Organization (FAO), UNEP and UNESCO, has contributed to the establishment of many parks and reserves in developing nations. Yet, despite such activities, certain kinds of natural communities will be irrevocably lost unless there is greater effort toward their conservation.

The danger to natural communities and wild species comes from many causes. One of the problems is the exploitation of wild species to have commercial value, as, for example, the removal of mahogany trees and other timber from the forests. The uncontrolled hunting of whales and other sea mammals has brought some species to the point of near – extinction. Control of this species considered to be detrimented has led to an unreasonable warfare against predatory animals. As the result, the

wolf, cougar, lion, lynx, eagles and hawks of various species and other carnivorous animals have been eliminated from the vicinity of human settlements or from pastoral lands. But the greatest single cause for the depletion of natural communities and wild species has been the desire to use land for more productive purposes. This has led to extensive clearing of forests and woodlands, burning of vegetation and the cultivation of undisturbed land for crop production.

Programs for the protection of natural communities must involve, first, rational planning for the use of land and control over its exploitation by agencies charged with such responsibilities. A general program of rational management and use of all lands and species is essential to the long-term survival of wild nature throughout the world.

The decision to maintain an area in an unmodified condition usually is determined by its overall scientific and aesthetic value. It may also be determined by the contributions the protected area can make to the region as a whole. For example, the regulation of water yield and streamflow.

The most restrictive category of land use is that of the scientific reserve, which is also known as a strict nature reserve. Such areas may be selected because of their unique geologic or biologic features.

Strict nature reserves and other types of scientific reserves often occupy only a relatively small area of land. Thus, in the rolling taiga country (swampy coniferous forests) of Northern Europe, Asia and North America, the decision to maintain a bog in the natural state may involve the protection of only a small area. On the other hand, the decision to protect the natural habitat and population of migratory caribou in the same region could involve the area of some hundred miles length and more than 100 miles in width – an area that might include taiga and tundra. It is always easier to protect rooted plants than mobile animals. For many migratory species international action is required. Any decision to protect an area in an undisturbed condition, however, must take ecological reality into account. For example, Everglades National Park in the US protects only the lower end of an extensive watershed but it makes efforts to control water and land use in areas outside the park because its future depends upon the flow and quality of water from the areas.

The designation of an area as a strict nature reserve is often proclaimed by law and recognized only by the appropriate government authorities. Such areas must have boundaries that are clearly identifiable to prevent accidental intrusion and modification.

Because a strict nature reserve is set aside for scientific purposes, its use for recreation or many other purposes may disturb its natural integrity. The use of such reserves is regulated by scientists. The decision to protect a natural area for scientific purposes is not a simple one. In some countries where neither money nor technical expertise is available, international assistance is required, in money or manpower. The establishment of national parks represented one of the firs national efforts to protect wild nature. Yet, in establishing Yellowstone National Park (the USA), Congress made clear that it was viewed as "a pleasuring ground" for people and not as an area intended only to safeguard communities of plants and animals. After the formation of the US National Park Service in 1916 the concept of managing parks so as to maintain their natural qualities was accepted. Nevertheless the practice of killing predatory animals continued in the US national parks into the 1930's and lasted in some African national parks as late as the 1960's.

A National Park may be made available for various purposes except those that can create great changes in the national environment. National Parks usually are selected on the basis of their unique qualities, outstanding natural beauty, unusual geologic formations, or remarkable array of wild animal or plant life. They may also be selected to protect areas of anthropological, archaeological or historic importance along with the natural or artificially modified landscapes that surround them. In the US national parks are dedicated solely to recreational activity. National Parks in England may protect cultural as well as natural landscapes, in that some may be dedicated to preservation of traditional forms of land use that are disappearing everywhere. Some national parks, such as in Peru, protect ethnic groups along with their hunting and gathering grounds.

As you see, exactly what constitutes a national park varies according to the nation and people involved. In national parks all incompatible activities are prohibited: hunting, logging, mining, commercial fishing, agriculture and livestock grazing. There is much debate as to whether tourist facilities should be within or outside national parks. National parks require extensive boundary demarcation, policing or patrolling, careful planning of trails, roads and other means of human access. Visitor use must be concentrated in those places in which human activities will do a minimum of harm. Usually a lot of money must be invested in the management of a national park. In East Africa national parks are a major

source of foreign exchange of countries in which they are located because of their unique wild animal life. Within the United Nations assistance is offered to developing countries by UNESCO, UNEP and FAO. Outside the UN assistance is available from International Union for Conservation of Nature and Natural Resources and from the World Wildlife Fund.

A less restricted use of an area of wild land is that directed toward the protection of certain species or groups of wild animals or plants. This type of land use includes wildlife refuges, sanctuaries and botanical reservations. Refuges and sanctuaries are established for preservation of endangered species. Examples include the Unifolozi Game Reserve, where the white rhinoceros are protected and the Mountain Zebra National Park in South Africa. The refuges for the California condor and the Torrey Pine in California are of a similar nature. Refuges and sanctuaries may also be provided for more abundant species that require protection for a certain period of their life cycle or in certain areas where they gather in order to reproduce. Many refuges and sanctuaries in the US and Europe are of this type. They provide protected sites for resting, breeding or wintering of wild life species (particularly waterfowl) that otherwise are hunted outside of the refuge. In such places management measures are necessary to remove any competitors or predators that may interfere with the breeding and survival of the young.

Marine and other aquatic parks and reserves have been established in many parts of the world to protect various forms of saltwater and freshwater plant and animal life. Australia, for example, has reserves that protect important areas of the Great Barrier Reef; Kenya and Tanzania have marine parks and reserves on their coast; Lake Baikal, Russia, is now included into a major national park designed to protect not only its unique freshwater life, but also its watershed areas.

**IX. Work in groups and discuss the questions:**

1. What is "natural community"?
2. What was the objective of protection natural communities in the ancient times?
3. What was the concept of the US pioneer environmentalists?
4. What are the reasons of natural communities' preserving?
5. What organizations are involved in preserving natural communities?
6. What causes danger to natural communities?

7. How can natural communities be protected?
8. What are the types of scientific reserves?

**Give the example of every type of scientific reserves.**

**Characterize every type of scientific reserves.**

**Give a summary of the text, using the vocabulary of the text. Be ready to present your summary to the class.**

**X. Translate the following text. Time – 30 minutes.**

## INTERNATIONAL AGREEMENTS ON CONSERVATION AND RESOURCE MANAGEMENT

The management of living resources is a high degree of international corporation and agreement on the international control. There are some international agreements concerning this matter. Such agreements provide hope that nations can learn to work together for their mutual benefit.

Antarctic treaty. The Antarctic continent remained unknown for a long period of time. Antarctica never became an area for the international dispute. Although part of this continent and some islands have been claimed by such nations as the US, Great Britain, Australia, New Zealand, Chile and Argentina. So, nations with the interest in Antarctica signed the Antarctic treaty in 1961. The continent became the world's largest strict nature reserve. The treaty provided for joint scientific research with the result to be shared by all. It also prohibited the exploitation of living Antarctic resources as well as any activities that would cause deterioration of those resources.

The value of the animal resources in the Antarctic waters has been known since the 18$^{th}$ century. The exploitation of them was begun during the 19$^{th}$ century. The enormous herds of whales were of particular importance. They congregated in the nutrient-rich waters to feed upon the abundant plankton. Krill is one component of the plankton. The Antarctic treaty established a protective zone in 1982 in an effort to preserve the krill. People hunted whales for whale oil, whalebone, and other useful products. The early whaling ships hunted the larger whales. It is estimated that when whaling began, there were 200,000 blue whales (the world's largest mammals) in the Antarctica; by 1965, however, the population of blues had been reduced to about 2,000. The gray whale of the Pacific was also brought to a point of near-extinction. The efforts of Antarctic whalers

then were shifted to smaller species: the humpback, fin whales, sperm whales; when they became scarce, the still small sei and minke whales were killed. As the danger of extinction became evident, the principal whaling nations agreed to sign the International Whaling Convention in 1946. The International Whaling Commission was established. It was authorized to sponsor scientific studies of whale populations and recommend limitations on harvest to perpetuate whaling population. But the number of whales continued to decline, and after 1967 the endangered whales – the blue, right, gray and humpback – were given complete protection. Starting in the 1970's quotas for other species were reduced to limits that enable the whales to maintain their population at certain levels. At its 1983 meeting the Commission, over the objections of Japan, Norway and Soviet Union, agreed to end commercial whaling entirely by 1986. Nevertheless, whaling continued after the deadline – though at a reduced level. But the record of whale conservation would be much worse had it not been for this international agreement.

Among the more successful treaties has been one to protect the northern fur seal, a species that breeds in the Pribilof Islands, in the Bering Sea. During the 19th century fur seals were reduced to a dangerous low level as a result of the heavy slaughter. In 1911 Canada, Japan, Russia and the US signed a treaty to limit the annual harvest of seals to a quantity that would not only sustain the population but also increase it annually. The result is that seals have increased.

A good example of an international agreement governing the conservation of species that migrate between two or more nations is the International Migratory Bird Treaty. It was established in 1918 between the US and Canada. This treaty limits the kill of migratory waterfowl. It also provides for the protection of the migratory species in their breeding grounds along their migration routes and at their wintering areas.

Special problems are involved in the regulation of trade and commerce in living animals and plants as well as in the products derived from them. Demands of wealthy nations of certain animal and plant products create severe problems in less affluent countries. The demand for fur and skin of rare animal species is artificially created in fashion centers of the world. Prices paid by wealthy people for these items often exceed the lifetime income of the most people in the countries from which leopards, crocodiles, tigers and other wild species come. Poachers try to obtain these animals even inside national parks and reserves. For each animal

or skin that reaches the foreign market, many more are destroyed in hunting, trapping and transporting. The purchasing countries can most effectively control the illegal trade in wildlife. This can be done by directing fashion away from the use of wild furs and by restricting the purchase of wild animals. In 1973, representatives of 80 countries signed the Convention on International Trade in Endangered Species of Wild Flora and Fauna, which prohibited commercial trade in 375 endangered species of wild animals. The treaty forbids trade in products derived from the animals as well as in living animals. The provisions also included endangered plants (such as rare orchids that now are being removed even from the remotest tropical forests).

The international exploitation of tropical forests is rather serious. These forests were spared from exploitation earlier because of their inaccessibility. Heavily exploited for special uses were species of high value, such as teak, ebony, sandalwood, mahogany, and other furniture woods. This situation has changed. With new machines and better transportation, it has become profitable to remove trees from the remote areas and to ship logs, bolts, wood chips to foreign markets. Most developing countries over timber rights to foreign companies in order to increase their national incomes and to advance the general national welfare of their people. Most of these timber contracts contain a few or no provisions for conservation. As the result, great areas of tropical forests have been laid waste, soils bared to erosions, and wildlife destroyed. Because no laws are violated in either the exploited or the home country, there is no effective redress.

**XI. Do you know that…**

During the 1800's, hunters and trappers returned from the Yellowstone region with reports of strange natural wonders. These stories – of hot springs spurting geysers, and a mountain of black glass – seemed unbelievable. In 1870, an expedition led by general Henry D. Washburn, surveyor general of the Montana Territory, visited the region to check the reports.

After exploring by horseback, the men camped near the Madison River. They talked about the sites they had seen and discussed developing of the land for resorts or for lumbering and mining. Then, Cornelius Hedges, a Montana judge, proposed that the region be preserved as a national park to benefit all people for all time. The other men agreed enthusiastically.

Members of the expedition promoted the national park idea by writing articles in newspapers and magazines, giving lectures, and meeting with high government officials. Their efforts succeeded in 1872, when Congress established Yellowstone National Park. During the 1890's, four more national parks were established – Yosemite, Sequoia, General Grant (now Kings Canyon), and Mount Rainier.

In 1906, Congress passed the Antiquities Act to stop looting and destruction at prehistoric Indian cities in the southwest. This law gave the President the power to establish national monuments on land owned or controlled by the government. Later, in 1906, Devil's Tower National Monument became the first such area. More than 30 national monuments were established during the next 10 years.

In 1916, Congress set up the National Park Service as a bureau of the department of the Interior. Stephen T. Mather, a Chicago businessman became its first director. Mather did much to promote and expand the National Park System. In 1916, there were 16 national parks and 21 national monuments, with a total area of 7,426 square miles (19,233 square km). When Mather retired in 1929, the system consisted of 25 national parks, 32 national monuments, and a national memorial. It had a total area of more than 16,000 square miles (41,400 square km).

In 1933, Congress transferred more than 50 areas from other government agencies to the Department of the Interior. These areas, most of them historical, were added to the National Park System. In 1935, the Historic Sites Act gave the secretary of the Interior the power to approve national historic sites.

The Park, Parkway and Recreation Area Study Act of 1936 led to establishment of recreational areas in the National Park System. The first such area, the Blue Ridge Parkway, was established later this year. An act of 1946 allowed the park service to manage recreational areas under cooperative agreement with other government agencies that controlled the areas.

Since the mid 1900's, much land has been added to the National Park System. By the early 1990's, the system has grown to include more than 300 areas and totaled about 125,000 square miles (325,000 square km) – an area larger than that of New Mexico. About 330 million visits are made to the parklands yearly.

**XII. Read the following text and write down an essay according to the plan. Be ready to present it to the class:**

1. National Park System.
2. Areas preserved for their natural features.
3. Areas preserved for their historical value.
4. Areas preserved for recreational use.
5. Planning a visit.
6. Problems of overcrowding.

## THE NATIONAL PARK SYSTEM

The United States is rich in natural wonderlands, famous historic places, and cities for many kinds of outdoors recreation. The Government has set aside more than 350 such areas to preserve them for the benefit and enjoyment of the people. All these areas are called parklands and they make up the national park system. They include parks, monuments, historic cities, memorials, cemeteries, seashores, lakeshores and battlefields. Even the White House and the Statue of Liberty are each part of the system.

The first national park in the world, Yellowstone National Park, was established by the US government in 1872. The National Park System developed with the creation of other parklands. Today, the system's parklands total about 125,000 square miles (321,000 sq. km) – an area larger than that of New Mexico. Every state, except Delaware, has at least one national parkland. The District of Columbia, Guam, Puerto-Rico, and the Virginian islands also have national parklands. National monuments include the Statue of Liberty, ancient national pueblos, and forts dating from colonial or revolutionary times. Among the historical areas are the homes of Presidents Abraham Lincoln, Franklin D. Roosevelt, and John F. Kennedy.

Nearly all the parklands of the national park system are managed by the national park service, a bureau of the US department of the interior. The director of the service names a superintendent to manage an individual or a group of area close together. Park rangers patrol the parklands to protect them from damage. Rangers also provide various services for visitors.

The National Park System consists of 20 types of areas, including national parks, national monuments, national memorials and national historic sites. The National Park Service acquires land of areas trough

donations, exchanges, purchases, or reassignment of federal property. Many parklands include some land that the government doesn't own. The government is gradually acquiring these sections. 34 areas are owned by state, local or private agencies. The National Park Service may contribute funds or private technical advice at assistance to the agencies that manage these areas.

The different types of areas in the national park system are preserved for **3 basic reasons**. Areas may have:

1. Beautiful and unusual nature features.
2. Historic value.
3. Attractive recreational features

Many areas are set aside for more than one reason.

Most national parks are preserved chiefly for outstanding beauty or scientific importance of their natural features. Mesa Verde National Park, however, is preserved mainly for its ancient Indian cliff dwellings. Many national monuments are preserved for unusual features. Among these are the Agate Fossil Beds, world-famous deposit of ancient animal fossils; and Death Valley, a desert with strange and beautiful rock formation in the earth's crust. Death Valley has the lowest land surface in the western hemisphere – 282 feet (86 meters) below the sea level. Wrangell-St. Elias National Park in Alaska is the largest area in the National Park System. It is about twice as large as the state of Hawaii.

To keep parklands in their unspoiled condition, the balance of nature must be preserved. That is, the plant and animal life, is left as undisturbed, as possible. Fishing is allowed, but hunting, lumbering and mining are prohibited in most areas. Livestock grazing is limited and is steadily being eliminated. In most areas, water resources may not be used for such purposes as irrigation or the production of hydroelectric power.

The National Park Service encourages recreational activities in the parklands if they don't disturb the surroundings. The service tries to teach people about the natural processes that have made the land of each area what it is. Park rangers and other staff members are trained to explain natural and scientific features to visitors. The service also encourages research and educational activities in all the nation's parklands.

Areas preserved for their historic value include ancient ruins, such as remains of mound builders' towns at Ocmulgee National Monument. Others honor important people or events in the history of the USA. These areas include battlefields, forts, national cemeteries and memorials and

historic bridges, buildings, dams, canals and farms. The most famous historic area is probably the White House.

The historical areas are made to look as much as possible as they did when they became popular. For example, staff members sometimes restore buildings and natural features, raise animals on the farms and wear clothing style from the past.

National recreation areas, national sea shores and national lakeshores provide water resources for outdoor activities. For example, 68 miles (109 km) white sand beaches and dunes line the Gulf of Mexico at Padre Island National Seashore. Its fishing, horseback riding, sailing and swimming attract visitors from all parts of the country.

In the other National Park System areas, such features as roads, trails, and water reservoirs have been developed to provide recreational opportunities. For examples, one of the world's largest artificially created lakes, 250 sq. mile (650 sq. km) Lake Mead, is a popular playground for water sports. Formed by Hoover Dam, the lake is part of the Lake Mead National Recreation Area.

The park system also has cultural areas, which provide attractive settings for fine arts performance. One such area is the Wolf Trap Farm Park for the Performing Arts in northeastern Virginia, which presents concerts and other fine arts programs in its 3,700-seat auditorium. Lawns around the auditorium provide seating space for additional 3,000 people.

Each year, more and more people seek a relaxing change from city life and everyday routine. In the mid-1980's, about 260 million recreational visits were made yearly to the nation's parklands. The Blue Ridge Parkway is one of the most popular national parklands in the National Park System. It has more than 16 million visitors a year. This highway in the Blue Ridge Mountains winds from Virginia through North California and connects Shenandoah and Great Smoky Mountains national parks.

Visitors and park rangers share the responsibility of protecting the parklands. Carelessness can start a forest fire that could destroy lives and valuable resources. Visitors are not allowed to remove or damage any natural feature – not even a flower. The National Park Service repeatedly warns the public not to feed, tease or touch any animals of the parklands.

Learning about a parkland beforehand will increase the enjoyment of a visit. Useful information includes the natural or historical features to look for, and why they are important. For an overnight stay, visitors should know whether the area has lodgings or campgrounds that will be

opened. Other useful information includes available service and recreational activities, traveling roads and various fees.

Visitors should stop at parkland's visitor center for pamphlets and maps that tell about the area's features and activities. At many parklands, staff members are available for campfire talks, guided trips, and amphitheater programs.

About 2/3 of the parklands are free to the public. The others charge a daily entrance fee. Fees are $1 to $4 for people not entering by car and range, from $3 to $10 per carload. People under the age of 16 and organized groups of high school age pay no entrance fee.

The park service sells Golden Eagle Passports for $25 a year. They may be used at all parklands that charge entrance fee. People 62 or older may obtain a free Golden Age Passport. People who are blind, permanently disabled or eligible for disability benefits may obtain a free Golden Access Passport. These two passports offer the same privileges as the Golden Eagle Passport as well as 50 % discount on other fees.

Overnight lodgings vary in price, according to quality; they include cabins, cottages, lodges, motels, hotels and trailer villages. These lodgings, available in nearly 40 areas, are operated privately under contract with the National Park Service. Visitors should make reservations early. The busiest periods, except in warm climate, are from late May to mid October, and weekends and holidays the rest of the year.

Camping is permitted in about 100 national parklands – in the wilderness or on campgrounds. A wilderness site may be a great distance from such conveniences as drinking water and food supplies. Wilderness campers must notify the superintendent or a park ranger for their plans. Back-country camping opportunities are available in more than 100 parklands.

Inexperienced campers should camp on the campgrounds. Some of these sites have a few conveniences, and others have a wide variety, including play areas for children. Some campgrounds are designed for individuals or for families or for other small groups. Other sites are intended for large, organized groups, such as school groups. Reservations could be made for group sites. Commercial reservation service is available for a few very popular campgrounds.

The growing number of visitors put more and more pressure on the national parklands. Problems include demands for such basic service as food, water, lodging and transportation. Only through careful planning

and management can these problems be handled without spoiling the parklands. Otherwise, overcrowding could result in too much automobile traffic, air pollution from automobile fumes and campfire smokes, dirty streams and jammed campgrounds.

The National Park Service has taken many steps to correct early mistakes in parkland development. It has tightened controls on air and water pollution, food supplies, and health care. In Yosemite National Park, for example, public transportation was begun to reduce automobile traffic. The National Park Service also cut the numbers of campers permitted in overcrowded Yosemite Valley.

**XIII. Library or Internet research work.**

Find the information on principal national parks of different countries at the library or on the Internet and fill in Table 8 according to the example:

*Table 8.* **National Parks of the World**

| National Park | Date | Area | Description |
|---|---|---|---|
| Algeria | | | |
| Ahaggar | 1983 | 295 square km | Forested mountains along the Mediterranean sea coast |
| El Kala | 1987 | 45,000 square miles | Barren volcanic plateau in the Sahara |
| Ukraine | | | |
| Karpatsky | 1980 | 503 square km | Carpatian mountains including Mount Hoverla and lakes; forest |

**XIV. Write an essay. Report your essay to the class.**

# VOCABULARY

**A**

| | | |
|---|---|---|
| adaptation | пристосування | приспособление |
| access | доступ | доступ |
| acid | кислота; кислий, їдкий | кислота |
| acid rain | кислотний дощ | кислотный дождь |
| air | повітря, атмосфера | воздух, атмосфера |
| alternative | альтернатива, вибір | альтернатива, выбор |
| aquifer | водоносний шар | водоносный слой |

**B**

| | | |
|---|---|---|
| ban | забороняти | запрещать |
| bedrock | корінна подстилаюча порода (бедрок) | коренная подстилающая порода (бедрок) |
| bog | болото, трясина | болото, трясина |
| breed | порода, розмножуватися | порода, размножаться |
| by-product | побічний продукт | вторичный продукт |

**C**

| | | |
|---|---|---|
| carbon dioxide | вуглекислота, вуглекислий газ | углекислота, углекислый газ |
| centipede | стоніжка | сороконожка |
| chemical | хімічний | химический |
| cockroach | тарган | таракан |
| community | спільність | сообщество |
| concern | турбота | забота |
| congestion | перенаселеність, скупченість | перенаселенность |
| conservation | зберігання | охрана, защита |
| consume | знищувати, поглинати | уничтожать, поглощать |
| contamination | забруднення | загрязнение |

**D**

| | | |
|---|---|---|
| ddamage | збиток, шкода | ущерб, повреждение |
| decay | гниття, розпад | гниение, распад |
| decompose | розпадатися, гнити, розкладатися | распадаться, гнить, разлагаться |

| | | |
|---|---|---|
| deforestation | вирубка лісів | вырубка леса |
| demonstration | наочний показ, вияв, прояв, доказ, довід | показ, демонстрация, доказательство |
| depleting | зменшення, виснаження | уменьшение, истощение |
| discharge | виділення, витікання, зливання | выделение, сток |
| disposal | видалення | удаление |
| disruption | розпад | распад, разрушение |
| dumping | вивалювання, вивантажування | сваливание, разгрузка |
| dustbin | сміттєвий ящик | мусорный бак |

**E**

| | | |
|---|---|---|
| earth | земля | земля |
| ecosystem | | экосистема |
| endanger | загрожувати | угрожать |
| environment | навколишнє середовище | окружающая среда |
| erosion | ерозія | эрозия |
| extinction | вимирання | исчезновение, вымирание |
| exhaust | викид | выхлоп |
| emission | виділяти | выделять |

**F**

| | | |
|---|---|---|
| facility | засіб | средство |
| fertilize | удобрювати | удобрять |
| fossil | скам'янілий | ископаемый |
| food chain | харчовий ланцюг | пищевая цепь |
| freshwater | прісна вода, прісноводний | пресна вода, пресноводный |
| fuel | пальне, паливо | топливо, горючее |
| fungus | гриб, пліснява, цвіль | гриб, плесень |

**G**

| | | |
|---|---|---|
| garbage | сміття | мусор |
| global warming | глобальне потепління | глобальное потепление |

| | | |
|---|---|---|
| greenhouse | теплиця | теплица |
| greenhouse effect | тепличний ефект | парниковый эффект |
| greenhouse issues | проблеми, пов'язані с тепличним ефектом | проблемы, связанные с парниковым эффектом |

**H**

| | | |
|---|---|---|
| habitat | жити | жить |
| harm | завдавати шкоди | причинять вред |
| health | здоров'я | здоровье |
| herbicide | гербіцид | гербицид |
| hoseholds wastes | домашні відходи | домашние отходы |
| human impact | вплив людини (на навколишнє середовище) | влияние человека (на окружающую среду) |

**I**

| | | |
|---|---|---|
| ice caps | льодовики | ледяные шапки |
| improve | поліпшувати | улучшать |
| indicator | показник | показатель |
| industry | промисловість | промышленность |
| influence | вплив | влияние |
| irrigate | осушати | осушать |

**J**

| | | |
|---|---|---|
| jeopardizing | підверження небезпеці | подвержение опасности |
| jungle | джунглі | джунгли |

**K**

| | | |
|---|---|---|
| knowledge | знання | знание |

**L**

| | | |
|---|---|---|
| lake | озеро | озеро |
| land fill site | місце захоронення відходів | отвал, место захоронения отходов |
| landscape | пейзаж | пейзаж |
| law | закон | закон |

**M**

| | | |
|---|---|---|
| methane | метан | метан |
| microbe | мікроб | микроб |
| mountain | гора | гора |
| movement | рух | движение |
| municipal wasts | міські відходи | городские отходы |

**N**

| | | |
|---|---|---|
| nature | природа | природа |
| natural resources | природні ресурси | природные ресурсы |
| nutrient | поживна речовина | питательное вещество |

**O**

| | | |
|---|---|---|
| oil | нафта | нефть |
| organic matter | органічна речовина | органическое вещество |
| overpopulated | перенаселений | перенаселенный |
| overuse | надмірне використання | чрезмерное использование |
| ozone layer | озоновий шар | озоновый слой |

**P**

| | | |
|---|---|---|
| pesticide | пестицид | пестицид |
| poison(ous) | отрута (отрутний) | яд (ядовитый) |
| pollutant | забруднітель | загрязнитель |
| pollution | забруднення (навколишнього середовища) | загрязнение (окружающей среды) |
| power station | електростанція | электростанция |
| preserve | зберегти | сохранить |
| prevent | запобігти | предотвратить |
| protect | захищати | защищать |
| protest | виступати проти | протестовать |
| purify | очищувати | очищать |

**Q**

| | | |
|---|---|---|
| quality | якість | качество |

**R**

| | | |
|---|---|---|
| rainforest | тропічний ліс | тропический лес |

| | | |
|---|---|---|
| raw materials | сировина | сырьё |
| recycle | переробити | перерабатывать |
| reduce | зменшувати | уменьшать |
| regenerate | регенерувати | регенерировать |
| release | визволяти | освобождать |
| renewable | відновлений | возобновлённый |
| reservoir | резервуар | резервуар |
| reuse | використовувати ще раз | повторное использование |
| rubbish | сміття | мусор |

**S**

| | | |
|---|---|---|
| safe | безпечний | безопасный |
| seaside | узбережжя | побережье |
| sewage | стічні води | сточные воды |
| smog | смог | смог |
| smoke | дим | дым |
| solar power | сонячна енергія | солнечная энергия |
| species | вид | вид |
| sulphur dioxide | двоокис сірки | двуокись серы |
| supply | постачання | снабжение |
| surroundings | середовище | среда |
| survive | виживати | выживать |

**T**

| | | |
|---|---|---|
| threat | загроза | угроза |
| throw away | викидати | выбрасывать |
| toxic | токсичний | токсичный, ядовитый |
| treat | обробляти (очищати) | обрабатывать (очищать) |
| treatment | обробка (очищення) | обработка (очищение) |

**U**

| | | |
|---|---|---|
| ultraviolet | ультрафіолетовий | ультрафиолетовый |
| underground | підземний | подземный |
| untreated | необроблений | необработанный |
| utilize | утилізація | использовать |

**V**

| | | |
|---|---|---|
| valley | долина | долина |

| | | |
|---|---|---|
| vapour | пар | пар |
| visual | візуальний, зовнішній | визуальный, видимый |

**W**

| | | |
|---|---|---|
| waste | відходи | отходы |
| waste disposal | знищення відходів | удаление/уничтожение отходов |
| wastewater | стічні води | сточные воды |
| water | вода | вода |
| water supply | водопостачання | водоснабжение |
| wave power | енергія води | энергия воли |
| wildlife | дика природа | дикая природа |
| wind power | енергія вітру | энергия ветра |
| woodlouce | стоноча, мокриця | стоножка, мокрица |

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