Unit 4 GLOBAL WARMINIG

Text A Global warming

Climate change and especially global warming has become the overriding environmental concern since the 1990s. Most discussions about the environment end up pointing out that, despite all other indicators that may show us doing better and better, we still have to change our current lifestyle dramatically because our way of life is now changing the climate and causing global warming.

The consequence is that we must change our industrial ways. Worldwatch Institute tells us that "the only feasible alternative is a solar/hydrogen-based economy." Greenpeace equivalently tells us that although we may have lost of oil, global warming prevents us from using it – "we are in a second world oil crisis. But in the 1970s the problem was a shortage of oil. This time round the problem is that we have too much." The only solution is choosing "a fundamentally new energy direction based on clean renewable energy, like wind or solar power."

In this way, climate change has become the environmental trump card - possibly we are not running out of raw materials, possibly we are actually doing better and better on almost any objective indicator, but if global warming demands a change, all other arguments will be of lesser import. Worldwatch Institute actually envisions how in the twenty-first century "the climate battle may assume the kind of strategic importance that wars - both hot and cold - have had during" the twentieth century. Backed up by a number of leading scientists writing in *Nature*, Worldwach Institute asserts that to develop the necessary technologies to combat climate change will require a monumental research effort, conducted with the urgency of the Manhattan Project or the Apollo space program.

These drastic efforts are justified by a general understanding of the severe consequences of global warming. In many people's view, climate change is linked to drastic increases in temperature and catastrophic climatic shifts. We fear that global warming could result in the destruction of our ecosystems, widespread famine, more and more powerful hurricanes, the melting of the ice caps and the oceans flooding the Maldives, Bangladesh and other low-lying areas on Earth.

This is no wonder, given the constant media barrage of possible greenhouse related catastrophes. Almost any weather event is now linked to climate change. In Leonardo DiCaprio's March 2000 interview of the President, Clinton told that if we do not change our ways, what will happen is,

" the polar ice caps will melt more rapidly; sea levels will rise; you will have the danger of flooding the sugarcane fields of Louisiana ; island nations could literally be buried. The whole climate of the United States, for example, could be

changed where you would have more flooding, more heat waves, more storms, more extreme weather events generally".

VOCABULARY:

Overriding	Важнейший	To assert	Утверждать
Concern	Забота	To conduct	Проводить
Feasible	Реальный	Urgency	Безотлагательность
Equivalently	То же самое	Drastic	Решительный
Shortage	Недостаток, дефицит	Widespread	Широко распространенный
Trump card	Козырная карта	Shift	Изменения
Objective	Цель	Famine	Голод
Indicator	Индикатор	Hurricane	Ураган
To envision	Предвидеть	To assume	Принимать форму
Barrage	Заграждение, плотина	Sugarcane	Сахарный тростник
Literally	Без преувеличения	To bury	Хоронить

EXECISE 1

Ответьте на вопросы: 1. When has the climate change become the environmental concern? 2. What do we have to change in order to avoid global warming? 3. What must future energy direction be based on? 4. Is the problem of global warming explained by shortage of oil? 5. Does the climate battle assume the kind of war? 6.What is important to develop the necessary technologies to combat climate? 7.What is climate change linked to from the point of many people's view? 8. What are the real consequences of global warming?

EXECISE 2

Найдите эквиваленты: важнейшая проблема экологии, приводить к указанию, жить все лучше и лучше, стиль жизни, пути развития производства, основанная на гидроисточниках энергии экономика, иметь расход энергии, находиться в условиях второго мирового кризиса потребления нефти, дефицит нефти, основное направление энергетики, израсходовать, практически по любому объективному показателю, иметь

меньшее значение, обрести стратегическое значение, всеобъемлющие усилия по исследованию, жестокие последствия, с точки зрения многих людей.

EXECISE 3

Расставьте в правильном порядке названия абзацев:

- Our fears about global warming
- A new energy direction
- Our lifestyle threatens the climate
- Third world war

EXECISE 4

Выделите в каждом абзаце предложение, наиболее полно отражающее основное содержание абзаца.

EXECISE 5

Составьте фразы, соответствующие содержанию текста:

1. Climate change and especially global warming has become the overriding environmental concern since	the 1990s.
	the 1980s.
	the 1960s.

2. The only solution of avoiding climate change is choosing	a fundamentally new energy direction.
	a new life style.
	a new methods of oil combustion.

3. To develop the necessary technologies to combat climate change will require	a monumental research effort.
	a new way of life.
	a new technologies.

4. In many people's view, climate change is linked to	drastic increases in temperature.
	to new technologies.
	to new climate.

Text B The basic greenhouse effect

The main concern of climate change is global warming and the predicted warming is based on the socalled greenhouse effect. The fundamental principle of the greenhouse effect is really quite simple and entirely uncontroversial. Several types of gases can reflect or trap heat, including water vapor, carbon dioxide (CO_2), methane (CH_2), laughing gas (N_2O), chlorofluorocarbons (CFC) gases and ozone. Together they are known as greenhouse gases.

The greenhouse gases trap some of the heat emitted by the Earth, rather like having a blanket wrapped around the globe. The basic greenhouse effect is good - if the atmosphere did not contain greenhouse gases the average temperature on the Earth would be approximately 33° C (59 °F) colder and it is unlikely that life as we know it would be able to exist.

The problem is that man has increased the quantity of greenhouse gases, CO_2 in particular, in the atmosphere. About 80 percent of the extra CO_2 comes from the combustion of oil, coal and gas whereas the other 20 percent comes from deforestation and other land changes in the tropics. About 55 percent of the released CO_2 is absorbed again by the oceans, by northern forest regrowth, and generally by increased plant growth (plants use CO_2 as fertilizer), but the rest is added to the atmosphere, such that the concentration of CO_2 has increased by 31 percent from preindustrial times to the present day.

If the extra greenhouse gases, and among them CO_2 reflect heat, more greenhouse gases in the atmosphere will (everything else being equal) lead to an increase in the temperature on Earth. This is the so called anthropogenic greenhouse effect, the extra, man-made greenhouse effect. This effect is our main interest. We will in the following just call it the greenhouse effect.

VOCABULARY:

Uncontroversial	Неоспоримый	Laughing gas	Веселящий газ
To trap	Удерживать	To wrap	Заворачивать
Vapor	Пар	Antropogenic	Антропогенный
Methane	Метан		

EXECISE 1

Ответьте на вопросы: 1. What are the predictions about future warming based on? 2. What is the fundamental principle of green house effect? 3. Is the basic green effect really good? 4. Why has the greenhouse effect become to affect the climate negatively? 5. Where does extra carbon dioxide come from? 6. What part

of the released carbon dioxide is added to the atmosphere? 7. Explain please what does the so called anthropogenic greenhouse effect mean?

EXECISE 2

Найдите эквиваленты: предсказываемое потепление, так называемый, быть известным как, основной принцип, средняя температура, известная нам форма жизни, способная к существованию, возобновление роста, представляющая для нас основной интерес, другие изменения состояния земель, дополнительные газы, в дальнейшем.

EXECISE 3

Составьте фразы, соответствующие содержанию текста:

1. More greenhouse gases in the atmosphere will lead to	an increase	in the temperature on Earth.
	a decrease	
	the stability	

2. About 80 percent of the extra CO_2 comes from	combustion of oil, coal and gas.
	deforestation.
	other land changes in the tropics.

3. The considerable part of the released CO_2 is absorbed again, and generally	by the oceans.
	by northern forest regrowth.
	by increased plant growth (plants use CO_2 as fertilizer).

4. Several types of gases, including water vapor, carbon dioxide (CO_2), methane (CH_2), laughing gas (N_2O), CFC gases and ozone are known	as greenhouse gases.
	as climate change gases.
	as easy gases.

5. The greenhouse gases	trap	some of the heat emitted by the Earth.
	reflect	
	absorb	

6. The main concern of climate change is	global warming.
	global cooling.
	global stability.

Text C The long-term development of the climate

In order to understand what will happen_with the global temperature, it is necessary first to look at what has happened. We have only used thermometers systematically and globally over the past century and a half (the world's longest record in Central England only goes back to 1659). If we want to know about the long-term development of the climate, we have to look for other ways of measuring temperature.

We can get a grip on the development of temperature by studying how it has affected other objects that we can measure today – the so called proxy indicators. For instance, temperature has in many ways affected the ice that has accumulated in polar regions. When we drill out an ice core, we can count the layers backwards in time and measure the fraction of melted ice, the concentration of salts and acids, the load of pollen or trace gases trapped in air bubbles. Equally, we can estimate temperature by looking at tree rings (because trees grow wider rings in warn weather), corals (measuring growth rings or trace elements), lake and ocean sediments, boreholes etc.

Throughout the past one million years there has occurred a series of eight glacial/interglacial cycles, driven by the changes in earth's orbit around the sun. The last interglacial period – the Holocene, which we still live in – began about 10,000 years ago. The melting ice caused the sea to rise some 120 m while the early temperatures were generally warmer than the twentieth century. The records seem to indicate substantial temperature swings throughout the Holocene on a millennial scale. Some indicators even show changes of 5 to 8 degrees C over 1,500 years. When looking over the long 400,000 years of ice cores, the Holocene appears the longest warm and stable period, which has naturally had profound implications for the development of civilization.

Basically, there is no disagreement that the centuries before 1900 were much colder. This phenomenon is well known in history as the "Little Ice Age," broadly stretching from 1400-1900. Evidence from a wide range of sources shows colder continents where glaciers advanced rapidly in Greenland, Iceland, Scandinavia,

and the Alps. Many European springs and summers were outstandingly cold and wet. Crop practices changed throughout Europe to adapt to a shortened and less reliable growing season, causing recurrent famines. Likewise in China, warm weather crops, such as oranges, were abandoned in the Kiangsi Province, and in North America the early European settlers reported exceptionally severe winters.

Summing up, there is no doubt that the temperature of the late twentieth century is greater than many previous centuries. However, this cannot be taken as a simple indication of overwhelming global warming as we are also coming out of a Little Ice Age. The temperature is higher now than at any time throughout the past 1000 years. This claim seems less well substantiated, as the data essentially exclude ocean temperatures, night temperatures and winter temperatures and are based almost exclusively on North American data.

VOCABULARY:

Thermometer	Термометр	Borehole	Скважина
To get a grip	Ухватить	Interglacial	Межледниковый
Proxy indicator	Заслуживающий доверия	Recurrent	Периодически повторяющийся
To accumulate	Накапливать	Substantial	Сильный
To drill out	Бурить	Swing	Колебание
Core	Среднюю часть	Millennial	Тысячелетний
Backwards	Назад	Scale	Масштаб
Fraction	Крупица	Profound	Глубокое
Pollen	Пыльца	Implication	Последствие
Trace	След	Stretching	Растянувшийся
Bubble	Пузырек	Broadly	Широко
Sediment	Осадок	Holocene	Голоцен
Overwhelming	Огромный	To substantiate	Делать реальным
Driven	Управляемый	Evidence	Свидетельства

EXECISE 1

Ответьте на вопросы: 1. What is it necessary in order to understand what will happen to the global climate? 2. When did people use thermometers systematically and globally? 3. What are the other ways of measuring temperatures? 4. What objects did the temperatures development affect? 5. How many glacial/interglacial cycles have occurred throughout past one million years? 6. Which interglacial period do we still live in? 7. Which are the main characteristics of the Holocene? 8. Were the centuries before 1900 colder or warmer? 9. Why did the crop practices

change throughout Europe? 10. What phenomenon is known in history as the Little Ice Age? 11. Why does the claim that the temperature is higher now than at any time throughout the past 1000 years seem less substantiated?

EXECISE 2

Найдите эквиваленты: для понимания, в течение прошлых полутора веков, долгосрочное изменение температуры, влиять на другие объекты, так называемые проверенные индикаторы, вызванный изменениями, значительные колебания температуры, в масштабе тысячелетия, естественно имевший глубокие последствия, не иметь разногласий, известный в истории как, нельзя рассматривать как простой показатель, не включать в эти данные, практика ведения земледелия, вегетативный период.

EXECISE 3

Составьте фразы, соответствующие содержанию текста:

1. We have only used thermometers systematically and globally	over the past century and a half.
	many centuries ago.
	over past 20 years.

2. We can get a grip on the development of temperature by studying how it has affected other objects that we can measure today	– the so called proxy indicators.
	– the main indicators.
	– the unimportant indicators.

3. For instance, temperature has in many ways affected	the ice.
	the pollen.
	the land.

4. Equally, we can estimate temperature by looking at tree rings, because trees grow	wider rings in warm weather.
	wider rings in cold weather.
	more narrow rings in warm weather.

5. Throughout the past one million years there	eight.	glacial/interglacial cycles, driven by the changes in
	five	

has occurred a series of	twenty	earth's orbit around the sun.

6. We still live in the last interglacial period which began about 10,000 years ago	– the Holocene.
	– the Homo Sapience.
	– the Homoclimate.

7. When looking over the long 400,000 years of ice cores, the Holocene appears	the longest warm and stable period.
	the longest cold and stable period.
	the longest warm and unstable period.

Text D The ozone hole

Following the publication of an article in the British reputable science journal *Nature* in 1985 a new environmental problem was suddenly on everybody's lips – there was a hole in the ozone layer above the Antarctic. At ground level, ozone is a pollutant, but in the upper atmosphere a thin ozone layer protect people, animals and plants from the sun's harmful ultraviolet (UV-B). Ozone depletion is also linked in several ways to climate change, but the links are fairly weak and can be disregarded here.

Although the ozone hole of 1985 appeared over an essentially uninhabited area, its finding marked a crucial turning point in public awareness, because observations for the first time confirmed what had until then only been theoretical speculations. Since then, it has been unequivocally corroborated that the ozone layer over the inhabited mid-latitude also has declined – 1998 by about 3-6-precent below 1979 levels. This is important since a thinner ozone layer lets more UV-B rays through increasing eye disease (cataracts), skin cancer and photoaging (wrinkling and premature aging of skin).

The ozone depletion was caused by man. Already in 1974, two researchers at the University of California, Irvine, who later earned a Nobel Prize for their work, had suggested that the so - called chlorofluorocarbons (CFCs) could be breaking down the ozone layer. Much research has later confirmed this basic link. CFCs had become ubiquitous since the 1930s, because they were cheap chemically stable and completely non-toxic. During the 1960s the use of CFCs exploded; they were used among other things in refrigerators, spray cans and air-conditioners and as foam blowing agents and solvents. CFCs are mixed into the atmosphere, some reaching the stratosphere, where they are broken down by high-energy solar ultraviolet radiation into free chlorine. Through complex interactions, these chlorine atoms react with ozone, essentially breaking down thousands of ozone molecules for each chlorine atom.

The shocking prospect of increasing skin cancer and cataracts caused politicians to react quickly. The Montreal protocol was signed in 1987, followed by the London (1990), Copenhagen (1992), Vienna (1995), another Montreal (1997) and Beijing (1999) protocols. The aim of these international agreements was initially to halve the consumption of the five main CFC gases in relation to 1986 figures and later to ban them almost entirely.

The international cooperation has rapidly born fruit: total production in 1996 was down below the production in 1996 was down below the production in 1960. At the same time, the total combined abundance of ozone of ozone-depleting compounds in the lower atmosphere peaked in about 1994 and is now slowly declining – actually faster than was predicted by the UN just four years earlier. The concentration of the ozone - depleting chlorine and bromide was predicted to peak in the stratosphere before the year 2000. The latest synthesis report of the UNEP ozone assessment predicts that "the ozone layer will slowly recover over the next 50 years. Likewise, the Antarctic ozone hole will slowly recover. Thus, today we have pretty much done what we can, ozone depletion is at its maximum and it will recover within the next 50 years.

Although the skin cancer rate has increased dramatically over the twentieth century, the long latency period means that the increases we see today are due to much more mundane causes.

That the ozone layer has damaged and now is at its lowest level, allowing in more UV-B radiation, is equivalent on the mid-latitudes to moving approximately 200 km (124 miles) closer to the equator – a move smaller than that from Manchester to London, Chicago to Indianapolis, Albany to New York, Lyons to Marseilles, Trento to Florence, Stuttgart to Düsseldorf or Christchurch to Wellington.

EXECISE 1

Выпишите незнакомые слова и составьте словарь, аналогичный предлагаемому в предыдущих уроках.

EXECISE 2

Переведите текст и составьте по одному вопросу к каждому абзацу.

EXECISE 3

Дайте названиz абзацам.

EXECISE 4

Выделите главную идею каждого абзаца и прочтите предложение, которое является главным для каждого абзаца.

EXECISE 5

Перескажите текст.