

SCIENCE

Topic: The Environment: Climate change and loss of biodiversity

Addressee: 4th class secondary schools

Timing: 2-4 hours

Type of activities: reading, listening, text completion, speaking, project work

Key vocabulary: deforestation, pollution, species extinction, overpopulation, globalization, climate change, ecosystem, biodiversity, international economies, invasive species

Useful language: damage the environment, reducing waste, what is needed, cannot be ignored, address the issue

Task 1a

Warm up.

In pairs/groups, write down all the words and phrases you can connect to the word



Task 1b

Look at the cartoons below. Try to use the words from the brainstorming to answer the questions.

- What do they refer to?
- What point is the cartoonist trying to make?
- Are they funny? Why/why not?





Task 2: Before reading

Match the following words to their definitions

biodiversity	(national) economy	tipping point	extinction rate
to get by	an ecosystem		

_____ : a community of plants, animals and other living organisms that share the benefits of a particular space or environment such as air, food, water and soil

_____ : the variability among living organisms from all sources; this includes diversity within species, between species and of ecosystems

_____ : the point at which a series of small changes or incidents becomes significant enough to cause a larger, more important change.

_____ : to manage or survive without something

_____ : the speed at which types of animals and plants cease to exist

_____ : the management of the resources of a community, country, etc., especially with a view to its productivity.

Task 3: While reading: Complete the article with words from the box

slowing down	is being made	threatened	polluted	increasing
fabricated	reach	dropped	include	destroy
protecting				losing

Nature loss 'to damage economies' (adapted from BBC news, 10 may,2010)

If, we on the earth continue to _____ nature ongoing losses may hit national economies.

The third Global Biodiversity Outlook (GBO-3) says that some ecosystems may soon _____ "tipping points" where they rapidly become less useful to humanity. Such tipping points could _____ rapid dieback of forest, algal takeover of watercourses and mass coral reef death.

Humanity has _____ the illusion that somehow we can get by without biodiversity, or that it is somehow peripheral to our contemporary world yet some countries are still not meeting the proposed targets to reduce this.

To make matters worse we are _____ biodiversity more quickly than ever before in history and extinction rates may be up to 1,000 times higher than the historical background rate.

The global abundance of vertebrates - the group that includes mammals, reptiles, birds, amphibians and fish, _____ by about one-third between 1970 and 2006 according to a UN report,

These include measures such as _____ the rate of habitat loss and degradation, _____ at least 10% of the Earth's ecological regions, controlling the spread of invasive species and making sure that international trade does not take any species towards extinction.

While progress _____ in some regions, the global failure means an ever-growing number of species are on the Red List of Threatened Species. "Twenty-one percent of all known mammals, 30% of all known amphibians, 12% of all known birds and 27% of reef-building corals assessed are _____ with extinction,".

The more that ecosystems become degraded the greater the risk that they will be pushed "over the edge" and the less useful they will become to humankind.

One example of this is that freshwater systems _____ with excess agricultural fertiliser will suffocate with algae, killing off fish and making water unfit for human consumption. Corals are another example, a quarter of them and many fish species will also disappear causing a huge impact on marine life. Countries will be fighting over much smaller stocks of fish and this problem will be made worse with the _____ pollution of the world's rivers.

Task 4: After reading

Decide if the following statements are True (T) or False (F). Correct the false ones

The destruction of ecosystems will create problems in world economic market	T	F
The destruction of ecosystems causes positive alterations in biodiversity	T	F
Everyone recognises this as a problem	T	F
Only some countries are doing enough to control the problem	T	F
Animals became extinct more quickly in the past	T	F
There are different sources responsible for this destruction	T	F

Task 5: Discuss the following questions with your partner

1. Why do many governments prefer not to believe that climate change is a problem?
2. What are the 3 areas that need most control?
3. What is the Red List?
4. Can you think of any other examples of how changes in biodiversity and ecosystems will have negative effects on our lives and economies?

Task 5. Work in groups to fill in the table then present a project to the class on your finding

	AIR	LAND	WATER	ANIMALS	PLANTS
Outline the main problems connected to these areas					
What must be done to control these effects?					

Possible follow-ups:

1. Read the following report outlining another possible negative effect of climate change.

Climate change violence (adapted from BBC news)

Changes to the climate are strongly linked to increases in violence around the world, according to a report in the journal Science. It said even small changes in temperature or rainfall were associated with a rise in conflict.

Researchers from two American universities looked at **data** recorded from all around the world - and found the same pattern emerge. Their examples include an increase in **domestic violence** in India during recent **droughts**, and **a spike in** assaults, rapes and murders during **heatwaves** in the US.

The report also suggests rising temperatures **correlated with** large conflicts - including ethnic clashes in Europe and civil wars in Africa.

The researchers say the link is substantial - and they're now trying to understand why. They believe changing conditions put pressure on resources, such as water and crops - driving some **to take up arms**.

Other studies show that heat causes a biological response, making people **prone to** aggression.

The scientists warn that a two-degree-centigrade rise in global temperatures could see personal violence increase by 15%, and group conflicts rise by more than 50% in some regions.

Find the meanings of the words in **bold** using your smart phones, compare your answers

2. Find out more about the topic from Bernie Sanders and the young Americans

(video activity)

https://www.facebook.com/senatorsanders/videos/10155876662867908/?hc_ref=PA GES_TIMELINE