

Lesson 6

1
차
시

My Promise with Mother Nature

단원 설정 취지

환경 문제와 자원 절약 방법에 대해 알아보고, 기업형 축산업이 환경에 끼치는 영향에 대한 글을 통해 환경 문제의 심각성을 생각해 보는 기회를 갖는다.

단원 지도 계획

차시	학습 단계	학습 활동
1	단원 시작	동영상 시청 / 학습 목표 및 내용 미리 보기
	Listen and Speak 1	환경 오염 사례 알아보기 - (유감 표현하기) "That's a pity!" ▶ 수업 자료: Dictation Worksheet
2	Listen and Speak 2	환경 보호 방법 제안하기 - (능력 여부 묻기) "Do you know how to...?" ▶ 수업 자료: Dictation Worksheet
	In Real Life	해수면 상승에 관한 뉴스를 듣고, 환경 보호에 관한 뉴스 전달하기 ▶ 수업 자료: Dictation Worksheet Speaking Worksheet (수행평가)
3 ~ 6	Before You Read	지구온난화의 원인 알아보기 / 본문 어휘 미리 보기 ▶ 수업 자료: Vocabulary Worksheet
	Reading	기업형 축산업이 환경에 끼치는 영향에 대한 글 읽기 ▶ 수업 자료: Further Questions for Reading
	After You Read	본문 이해 점검하기
7	Language Focus	본문에 나온 어휘, 표현, 문법 익히기 ▶ 수업 자료: Vocabulary Test Grammar Worksheet
8	Writer's Workshop	물 절약을 독려하는 신문 기사문 완성하기
9	Wrap-up Test	단원 마무리 테스트
10	Culture	세계의 친환경적 지역 두 곳에 관한 글 읽고 친환경적 지역 검색하기
	Read More!	추가 읽기: One Happy Day in 2050 (p.151)

동영상 소개 한 여학생의 일상을 통해 인간이 행하고 있는 환경 오염 사례를 플라스틱 오염, 음식물 쓰레기 오염, 우주 오염 등의 다양한 측면에서 보여주는 영상이다.

Teaching Tips 영상 시청 후 warm-up 활동으로 간단한 질문을 통해 이해도를 점검한다.

• Which environmental pollution do you think is most serious?

(I think the impact of food waste on the environment is most serious. Besides the environmental problems, lots of money and resources are wasted too.)

• What are some ways to stop environmental pollution?

(I think we should use public transportation more. Using fewer plastic bags is also one way to stop environmental pollution.)

Self-check

Check if you know the expressions below.

유감 표현하기

☐ I'm sorry to hear that.

능력 여부 묻기

☐ Are you good at taking care of earthworms?

Compare the structural differences between the sentences on the right and those below.

• **Two thirds** of the water is used for other purposes.

• **People say that** livestock produces more manure.

Before You Begin

Watch how humans in the modern world are irreversibly impacting the environment.



Link 스마트 교수자료

Lesson Overview

Theme 환경 보호 / 자원 절약

L & S 환경 문제와 자원 절약 방법에 대해 듣고 말한다.

R 기업형 축산업이 환경에 끼치는 영향에 대한 글을 읽는다.

W '물 발자국'을 소개하고 물 절약을 독려하는 기사를 완성한다.

Listening & Speaking

유감 표현하기 **That's a pity!**

능력 여부 묻기 **Do you know how to take care of earthworms?**

Language Structures

• About **one third** of the world's fresh water **is** used for meat production. ▶ 〈부분사 + of + 명사〉

• Livestock **is said to** produce 130 times as much manure as humans. ▶ 〈be said(predicted) + 동사원형〉

Plan Ahead Skim the pages that follow and write about what you expect to learn in this lesson.

• I will learn about various environmental problems.

• The title of the part that looks most interesting is "The Unknown Contributor to Global Warming".

Listen and Speak 1

What Humans Do to Nature

유감 표현하기 **That's a pity!**

그거 참 안됐네!

• 유사 표현

I'm sorry to hear that. / That's too bad.

A Listen

1 Which program did the girl most likely watch?

INTERNATIONAL GEOGRAPHIC BROADCASTER		
		
6-7 p.m.	7-8 p.m.	8-9 p.m.
a Wonders of Marine Life	b Plastic Recycling Campaign	✓ c Plastic Waste in the Oceans

2 Why was the tortoise named "Lonesome George"?

- ✓ a He was alone when he was first found.
- b A scientist named George discovered him.
- c He was raised by a man named George.

Plus+ Dictation Worksheet (p.196 in Teacher's Material)

B Speak Out

Link 스마트 교수자료(익소 PPT)

Talk with your partner about each case below.

A Look at this article. It says **chimpanzees will soon go extinct.**

B **That's a pity!** I guess it's because of **overhunting** by humans.

A You're right. We should take actions now.



- people on the Marshall Islands in the Pacific can no longer live there
더 이상 ~아닌 (= not any longer)
- rising sea levels caused by global warming
해수면



- large areas of the Amazon forests are disappearing every year
- careless clearing of forests to get resources
무분별한 벌목

122 Sample Talk further Talk about the human activities that cause harm to nature.

- A The water pollution of our rivers is getting more and more serious.
- B **That's a pity!** I guess it's because of the garbage people throw into them.

Transcripts for Listen and Speak 1

- 1 W You know what? The oceans could contain more plastic waste than fish by 2050.
 너 그거 아니? 플라스틱 쓰레기(폐기물)
 ~조음에
 M That's unbelievable. Where did you hear that?
 W Yesterday, I happened to watch a documentary about plastic waste in the ocean.
 우연히 ~하다
 M What did it say?
 W According to marine scientists, about eight million tons of plastic ends up in the oceans every year.
 해양의, 바다의
 결국 ~하게 되다
 M Eight million tons is a lot, but the oceans are huge.
 W Well, imagine five grocery bags full of plastic waste on every 30 centimeters of coastline around the earth.
 쇼핑 가방 ~로 가득한 30cm마다
 M I had no idea so much plastic ended up in the oceans. That's a pity!
 W Me, neither. We need to do something about this immediately.

More & More end up

end up은 '결국 ~하게 되다'의 뜻으로, 어떤 장소, 상황, 또는 상태에 놓이게 된다는 뜻이다. end up 뒤에는 (동)명사, 전치사구, 형용사 등이 올 수 있다.

- end up marrying her 결국 그녀와 결혼하게 되다
- end up in hospital 결국 입원하다
- end up jobless 결국 실직하게 되다
- end up as a lawyer 결국 변호사가 되다

- 2 W Today, I'm going to talk about endangered animals on the Galapagos Islands. Have you heard about the Pinta giant tortoise? It's a giant tortoise which used to live on Pinta Island in the Galapagos. Once, about 300,000 giant tortoises lived on the island, but their population dropped to nearly zero due to overhunting by humans, and they were thought to be extinct for a while. To our surprise, however, one male Pinta giant tortoise was found in 1971 and was named "Lonesome George" because he was found alone. Scientists did their best to save the species, but on June 24th, 2012, he died, marking the complete extinction of the species. That's a pity, isn't it?

More & More used to

used to는 '과거에' ~하곤 했다'의 뜻으로 과거에는 자주 일어났거나 사실이였지만 현재는 그렇지 않은 일에 사용된다.

- ex) He used to make \$3,000 a month. 그는 한 달에 3천 달러를 벌곤 했다. (지금은 아니다.)
 She used to be a volleyball player. 그녀는 배구 선수였다. (지금은 아니다.)

| More Sample for Talk Further |

- A To my surprise, I happened to see some fish floating dead on the lake.
 B That's a pity! I think their deaths are probably due to the water pollution from the factory.

Oral Quiz

- 1) By when do people say the oceans could have more plastic waste than fish?

They could have more plastic waste than fish by 2050.

- 2) How much plastic waste is thrown into the oceans every year?

About eight tons of plastic waste is thrown into the oceans every year.

Oral Quiz

- 1) What made the population of the giant tortoises decrease to almost zero?

Overhunting by humans made the population of the tortoises decrease to almost zero.

- 2) When did the Pinta giant tortoise go extinct completely?

The Pinta giant tortoise went extinct completely in 2012 when "Lonesome George" died.

능력 여부 묻기 **Do you know how to** take care of earthworms? (너는) ~하는 방법을 아니?

• 유사 표현

Are you good at... ? / Can you... ?

Get Ready»

Do you think you live a green life? How green is your way of living? Mark below.

1	2	3	4	5
poor		excellent		

Sample

Yes, I do. I think I live a good green life. I always try to recycle and use natural products.

A Listen

1 What is the main topic of the dialog?

- a changes in earthworms' diet
- b the environmental effects of earthworms
- ✓ c food waste recycling with earthworms

2 Which picture best illustrates the rainwater harvesting system mentioned in the dialog?



B Speak Out



Link 스마트 교수자료(의소 PPT)

Talk with your partner about ways to go green.

- A I seem to **use too much toner when printing**. Do you know how to cut down on it?
~을 줄이다
- B How about **turning on the toner-save mode on your printer**?
토너 절약 모드
- A That's a good idea. I'll give it a try.

- pay too much for electricity
- use **energy-efficient** products 에너지 효율이 좋은



- waste too many plastic bags
- carry your own **eco-bag** with you 친환경 가방



- use too much water at home
- **putting plastic bottles filled with water in your toilet tank**
your own



Sample

Talk further

Talk about things you do to save resources.

A I think my water bill is too high. Do you know how to cut it down?

B Try to use your washing machine when you have a full load to save water.

Transcripts for Listen and Speak 2

- 1 W I really enjoyed the food. Thank you for inviting me.
 M You're welcome. I'm glad you liked it.
 W By the way, what's that box for? I mean the one beside the sink.
 M It's a food waste disposal box. I keep earthworms in it, and food waste from the table goes there.
 W How interesting! So the earthworms eat the same things you do?
 M Sure. They eat almost anything.
 W Awesome! **Do you know how to** take care of earthworms?
 M It's very simple. If you're interested, I can give you some of mine and show you how to take care of them.
 W That'd be wonderful.

More & More What ~ for?

What ~ for?는 Why?와 비슷한 뜻으로, 이유나 용도(목적)를 물을 때 사용하는 표현이다.

ex) What did you call him for? 그에게 왜 전화했나?

What is this button for? 이 버튼은 무슨 용도이니?

- 2 M It's pouring outside. Do you have an umbrella with you?
 W No. It'd be great if we had a huge umbrella over the entire city, wouldn't it? That way, we wouldn't have to get wet.
 M Yeah, and we could solve the water shortage, too.
 W How would we do that?
 M Most rainwater is wasted. If we could collect it in a container, we could use it later.
 W **Do you know how to** collect rainwater?
 M If you build an underground storage tank and connect it to the roof, all the rainwater can be collected in it.
 W Then the water can be used later for many purposes, right?
 M Sure. That's exactly what modern rainwater harvesting systems do.
 W Really? So the technology already exists, huh? Amazing!

More & More 구어체 표현

It'd be great if~는 '~라면 좋을 텐데'의 의미로 현재 그렇지 못한 것에 대한 소망을 나타낼 때 쓸 수 있다.

ex) It'd be great if you taught me how to operate the machine.

네가 그 기계를 작동하는 법을 가르쳐주면 좋을 텐데.

| More Sample for Talk Further |

- A Do you know how to save energy in the kitchen?
 B My mother always covers pots so that they can boil quicker.

Oral Quiz

- 1) Why does the man keep earthworms in the box beside the sink?

It's because they eat food waste.

- 2) What does the woman want to know about earthworms?

She wants to know how to take care of them.

Oral Quiz

- 1) What is the rainwater harvesting system?

It collects rainwater in a container to use it later.

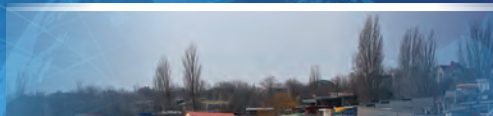
- 2) Why is the woman surprised?

She is surprised to hear that the rainwater harvesting systems already exist.

A Listen

Teaching Tips 뉴스 진행자의 어투, 억양 등에 주목해서 듣게 한다.

Listen and fill in the blanks.



Transcripts Good evening and welcome to KBA news. Our first report tonight deals with the enormous problem of rising sea levels, which is due to global warming. As the earth's climate continues to warm, the sea levels are expected to rise more and more rapidly, putting coastal areas such as Venice and Florida at greater risk of flooding. Scientists claim that if the seas rise more than one meter above current levels, low-lying countries such as Bangladesh will have millions of climate refugees. What's more, dams in the Netherlands may collapse. **That's a real pity!** Reporter Linda Park has more.

KBA NEWS



The earth's climate continues to warm, and this causes global sea levels to rise. Many coastal areas such as Venice and Florida are at greater risk of flooding.

Words & Expressions

- deal with ~을 다루다
- put ~ at risk ~을 위험에 빠뜨리다
- current 현재의
- climate refugee 기후 난민
- enormous 막대한, 엄청난
- claim 주장하다
- low-lying 저지대의
- what's more 게다가

B Speak Out



Complete the following with your ideas. Then take turns delivering the news to your group members.

KBA NEWS



Good evening, I'm _____ from KBA news. Air pollution is getting worse, and its impact on our health is becoming more serious. That's a real pity! Experts say we can handle the matter by starting from small things like _____ and _____. Let's hear details from our reporter, Maggie.

Link 스마트 교수자료
(배경지식 PPT)

배경지식 해수면 상승

해수면 상승의 주된 원인으로는 바닷물 온도가 상승함에 따라 바다의 부피가 늘어나는 열팽창과 빙하의 용해를 꼽을 수 있다. 물디브를 포함한 많은 섬나라들이 수몰될 위기에 놓이고 있으며 우리나라의 제주도, 울릉도, 독도와 같은 화산섬도 바다 아래로 가라앉고 있다.

Teaching Tips 발표 전 미리 평가 항목을 알게 하여 발표할 때 평가되는 항목을 인지시킨다. 그 후 모둠원이 돌아가며 발표를 시작하게 한다.

Peer-check

Exchange books and evaluate one of your group members' presentation.

Was the pronunciation clear?	/ 5
Was the news informative?	/ 5
Was the flow of the news report natural?	/ 5

Help Box

- walk short distances
- take public transportation
- use less air freshener products
- plant trees in gardens

(your own)

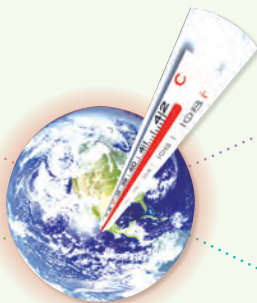
Plus+ Speaking Worksheet (p.198 in Teacher's Material, 뉴스 진행자로서 환경 파괴의 심각성을 전달하는 내용으로, 수행평가 자료로 활용할 수 있다)

A Get Connected

What do you think makes the earth warmer? Check all that apply.



eating beef



traveling in a plane



using cell phones



driving a car



drinking bottled water

Mini-talk Which do you think contributes most to global warming? Talk with your partner.

Sample

I think driving a car contributes most to global warming because too many people use too many cars.

B Vocabulary

Choose the best definition of the underlined word.

- Manure helps trees and crops to grow well. c
- I think it's cruel to raise pigs in confined pens. d
- Due to the unexpected explosion, many miners suffocated. a
- The heavy rainfall caused enormous amounts of runoff, which swept everything away. b

a to be killed due to lack of air

b water that flows from land to streams and rivers

c waste matter from animals

d narrow and surrounded by walls

Teaching Tips 본문 수업 전 과제로 내어 주어 미리 읽으면서 이해가 안 되는 부분은 체크해 오도록 지도한다.

Plus+ Vocabulary Worksheet (p.199 in Teacher's Material)

✓ **Self-check** Timed Reading

The more you read, the better you understand. Read the text (pp. 126-133) and record your reading time below.

1st ____ min. ____ sec.

* While reading, check where your understanding fails.

Overview 이 글은 기업형 축산으로 인한 강과 해양 오염, 그리고 소에서 방출되는 메탄가스 문제를 통해, 가축의 사육과 육류의 소비가 환경에 미치는 영향을 제시하며 우리의 인식 전환이 필요하다고 말하고 있다.

Livestock and

가축

the Environment



(Being) Sold in stores everywhere, bacon may be a triumph of modern living, but there is a dark side to the bacon industry. Pigs are raised in confined pens and fed corn that has been grown in vast fields that stretch as far as the eye can see. To grow the corn, a huge amount of fertilizer is used, which eventually gets washed into rivers and streams. This affects the ecosystems of such bodies of water, and the fertilizer runoff ends up in fish and other marine life for kilometers around. This is the process necessary to get bacon onto our breakfast tables.



해석 가축과 환경

베이컨은 도처의 상점에서 팔리므로 현대 삶의 대성공 사례일지 모르지만 베이컨 산업에는 어두운 면이 있다. 돼지들은 좁은 우리에서 사육되며 끝도 안 보일 만큼 멀리 뻗은 거대한 들판에서 길러진 옥수수를 먹게 된다. 그런 옥수수를 키우기 위해 엄청난 양의 비료가 사용되며, 비료는 결국 강이나 시내로 씻겨 들어간다. 이것은 그런 수역의 생태계에 영향을 미치며, 비료 유출수는 결국 주변 수 킬로미터의 물고기와 해양 생물로 스며들게 된다. 이것이 베이컨을 우리 아침 식탁에 올리는 데 필수적인 과정인 셈이다.

Factory Farming That Dries Up Our Planet

기업형 축산

고갈시키다

Annual meat consumption has reached an average of over 40 kilograms per person globally, and the demand is increasing. To meet growing demand, livestock industries have turned to large-scale “manufacturing” of meat in huge “factories.” Such a move, however, puts strain on the environment, in particular on the land and water resources of the earth.

해석 자구를 고갈시키는 기업형 축산

연간 육류 소비는 전 세계적으로 1인당 평균 40kg이 넘게 되었고, 수요는 증가하고 있다. 늘어가는 수요를 충족시키기 위해 가축 산업은 거대한 “공장”에서의 육류의 대규모 “생산”에 의존하고 있다. 하지만 그런 움직임은 환경, 특히 자구의 토지와 수자원에 부담을 준다.

- livestock
- triumph
- confined
- fertilizer
- runoff
- turn to
- strain

Q1 What could be the title for the first paragraph?

✓ a The Inconvenient Truth about Your Bacon

b How to Avoid Bacon for Breakfast

Q2 What will the paragraphs in the next page deal with?

a the ways to promote meat consumption

✓ b the environmental effects of factory farming

Every year, over one ^{10억} billion tons of ^{곡물} grain is ^{소비되다} consumed by farm animals. More than ^{가축} two thirds of all agricultural land is used to raise grains and vegetables for livestock while merely ^{가축} eight percent of the agricultural land is ^{접 ~한 반면} used to grow food for direct human consumption.

Moreover, about ^{영 공급} one third of the world's fresh water is used for meat production, which cuts into the supply of water for humans. The ^{침해하다; 끼어들다} bed of the Colorado River in the U.S. is ^{★ <be said(predicted) to + 동사원형>} expected to dry up soon; too much water has been ^{바닥} drained from the river as neighboring farms need ^{(물을) 퍼내다} to grow feed for cows. In short, a large ^{왜 ~이기 때문에} portion of our natural resources are used for meat production. ^{먹이, 사료} ^{부분}

- consume
- supply (n.)
- drain

Reading Strategy

Reading Critically

When you read an argumentative text, evaluate the author's point of view before you accept it as true. While reading the text, check parts that raise questions for you. (→ Q4)

Teaching Tips 비판적 글 읽기

필자는 다양한 근거를 들어 자신의 주장을 펼치고 있는데, 이에 대해 학생들이 글을 읽을 때 글의 내용이 사실인지, 글쓴이의 견해는 논리적이고 설득력이 있는지, 그리고 자신의 신념이나 가치와 다른 부분이 있는지 등을 생각하며 읽도록 지도한다.

source: Food and Agriculture Organization of the United Nations (2006) *Livestock's Long Shadow: Environmental Issues and Options* / <https://woods.stanford.edu> / <https://www.ncbi.nlm.nih.gov>

해석 매년, 10억 톤 이상의 곡물이 가축에 의해 소비된다. 전체 농지의 3분의 2 이상이 가축을 위한 곡물과 채소를 기르는 데 이용되며, 반면에 농지 중 단지 8퍼센트만이 사람의 직접적인 소비를 위한 식량을 재배하는 데 이용된다. 더욱이, 세계의 담수 중 약 3분의 1이 육류 생산에 사용되고 있으며, 이는 사람들을 위한 물 공급을 침해하고 있다. 미국의 콜로라도 강 바닥이 곧 마를 것으로 예상된다. 이는 이웃한 농장들이 소 사료를 재배해야 하므로 너무 많은 물을 그 강에서 퍼내고 있기 때문이다. 요약하면, 우리의 천연자원 중 상당 부분이 육류 생산을 위해 사용되고 있다.



Q3 Underline the sentence that summarizes the main idea of this page.

Q4 **How about you?** Do you think it is a problem that more land is used for meat production than for direct human consumption? If yes, why? If no, why not?

Sample I think it is a problem. We can feed a lot of starving people with the food that is being used for livestock.

In short, a large portion of our natural resources are used for meat production.

Overview 가축 분뇨가 바다에 생기는 Dead Zone의 주요 원인이라고 주장하는 글이다.

From Land to the Ocean

More & More <It is + 형용사 + that + 주어 + (should) 동사원형>
형용사가 당위, 의무, 강조 등의 필연성을 의미하는 형용사일 경우 that절에는 (should + 동사원형)이 온다. 필연성을 의미하는 형용사에는 necessary, imperative, essential, important 등이 있고 should는 생략 가능하다.
ex) It is **imperative** that the treatment **(should)** continue for a minimum of 3 weeks. 그 치료는 최소한 3주 동안은 반드시 계속해야 한다.

불가피한, 필연적인

- inevitable
- extend
- result in
- manure

As more people want more meat, it is **inevitable** that land for livestock **be** extended to meet the demand. More meat production results in increased water pollution in both rivers and oceans since cows and pigs eat a lot and at the same time produce a lot of manure.

확대하다

Livestock **is said to** produce 130 times as much manure as humans in the U.S. When **not** managed properly, the manure and water containing it **cause** severe harm to the ecosystems of rivers and oceans. When rain comes, manure is washed away with the runoff, polluting nearby soil, streams, and rivers **all the way** until it reaches the ocean.

★ <be said(predicted) to + 동사원형>

거름, 분뇨

~한다고 한다

(they are)

제대로, 적절히

S

V

생태계

줄곧, 내내

- properly
- ecosystem

해석 육지에서 바다로

더 많은 사람들이 더 많은 육류를 원하고 있으므로, 가축을 위한 토지가 수요를 충족시키기 위해 확대되어야 하는 것은 불가피하다. 소와 돼지가 많이 먹고 동시에 많은 분뇨를 배출하므로 더 많은 육류 생산은 결과적으로 강과 바다 모두에서 수질 오염 증가의 결과를 야기한다. 가축은 미국에서 사람보다 130배 많은 분뇨를 배출한다고 한다. 제대로 관리되지 않으면 분뇨와 그것을 함유한 물이 강과 바다의 생태계에 심각한 피해를 초래한다. 비가 올 때, 분뇨는 빗물과 섞여 씻겨 내려가 바다에 도달할 때까지 내내 인근의 토양, 시내, 강을 오염시키게 된다.

The Gulf of Mexico is known as one of the biggest habitats for a variety of marine creatures.



Q5 What can you infer from the first sentence of this page?

- a The author suggests that livestock farms should extend their areas to meet the demand.
- ✓ b The author believes that the increasing meat demand is responsible for the extended areas of livestock farming.

The brightly colored waters in this satellite picture indicate the areas of the dead zone that formed in the Gulf of Mexico in 2002.

(source: Sediments in Gulf of Mexico (2002), NASA)



Once it reaches the ocean, it contributes to the formation of what is known as a “dead zone.” Dead zones occur around the world, primarily near areas where heavy farming and industrial activity spill nutrients into the water. Concentrated levels of nutrients in water result in the blooming of algae, which are simple forms of water plants. When too many plants grow in the water, they use up the ocean’s oxygen, suffocating other plants and animals. The largest known dead zone occurred in the Gulf of Mexico in 2002, when runoff from the Mississippi River caused over 20,000 square kilometers of the Gulf area to become uninhabitable for oceanic life.

- contribute to
- nutrient
- concentrated
- bloom
- oxygen
- suffocate
- uninhabitable

해석 일단 바다에 도착하면, 그것은 “죽음의 해역”으로 알려진 것의 형성의 원인이 된다. 죽음의 해역은 주로 과도한 농업 및 산업 활동이 영양물질을 물에 유출하는 지역 근처에서 전 세계적으로 발생하고 있다. 농축된 물 속 영양분은 단순한 형태의 수생 식물인 해조류가 번식하는 결과를 야기한다. 너무 많은 식물이 물속에 자라게 될 때, 그것들은 바다의 산소를 고갈시켜 다른 식물과 동물을 질식사하게 된다. 알려진 가장 대규모의 죽음의 해역은 2002년에 멕시코만에서 발생했는데, 그때 미시시피강의 유출수로 인해 멕시코만에서 2만 평방 킬로미터가 넘는 지역이 해양 생물이 살 수 없게 되는 결과를 초래했다.

* alga (pl. algae): 해조류
[ælgə] [ældʒi:]

Q6 Complete the cause-effect relationships that lead to the formation of a dead zone.

[manure washed away with runoff → soil, streams, and rivers getting polluted on its way to the ocean]
[→ blooming of algae in sea water → low levels of oxygen → suffocation of marine life]

The Unknown Contributor to Global Warming

원인 기여자

지구온난화

- atmosphere
- methane [méθein]

The increasing demand for meat and meat products brings trouble **not only** to the natural resources under our feet **but also** to those overhead in the atmosphere. Even though carbon dioxide is a major cause of global warming in the air, recent research has shown that methane can have a greater impact.

대기, 공기

이산화탄소

- be responsible for
- emission

Methane is responsible for about 16 percent of global greenhouse gas emissions. That doesn't seem like much, but experts warn that methane is over 20 times as

= 20 times more powerful than carbon dioxide powerful as carbon dioxide in

trapping the sun's heat in the atmosphere. Where does all the methane come from?

메탄

~의 원인이다. ~에 책임이 있다

온실가스

방출

잡다, 가두다

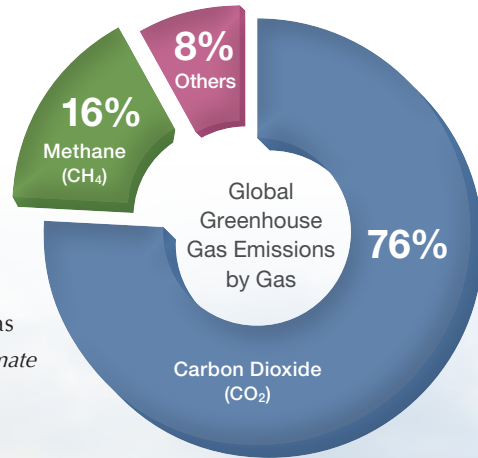


Figure 1 Global Greenhouse Gas Emissions by Gas
(source: CLIMATE CHANGE 2014: Mitigation of Climate Change (2014))

해석 지구온난화의 알려지지 않은 원인

육류와 육류 제품의 늘어나는 수요는 우리 발아래의 천연자원뿐만 아니라 머리 위 대기 중의 천연자원에도 문제를 야기한다. 비록 이산화탄소가 대기 속에서 지구온난화의 주요 원인일지라도 최근의 연구는 메탄이 더 큰 영향을 줄 수 있다는 것을 보여 주고 있다.

메탄은 지구 온실가스 방출의 16퍼센트를 담당한다. 그것이 많은 것처럼 보이지는 않지만, 전문가들은 메탄이 대기 속에서 태양열을 가두어 두는 데 이산화탄소보다 20배 이상 더 강력하다고 경고한다. 그 모든 메탄은 어디에서 오는가?

More & More that, those는 앞에서 나왔던 명사의 반복 사용을 피하기 위한 대명사로 쓰인다. 가리키는 명사가 단수일 때에는 that을, 복수일 때에는 those를 사용한다.

ex) The **climate** of this country is milder than **that** of Germany.

Prices in Busan are lower than **those** in Seoul.

- Q7** (1) More methane is emitted into the atmosphere than carbon dioxide. [T / F]
(2) Methane is a greenhouse gas that is deadlier than carbon dioxide. [T / F]

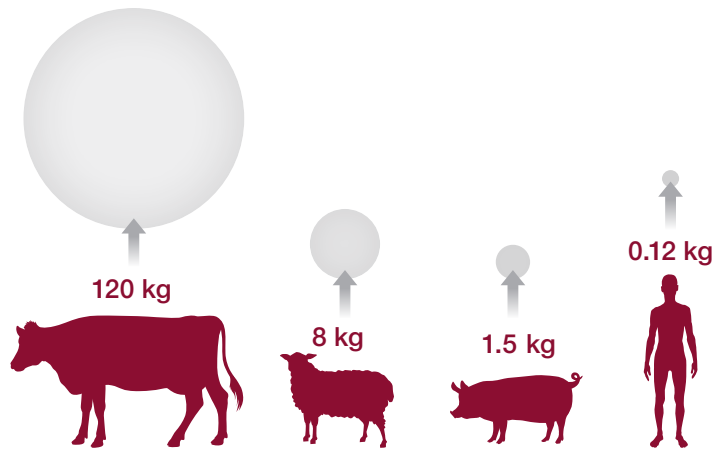


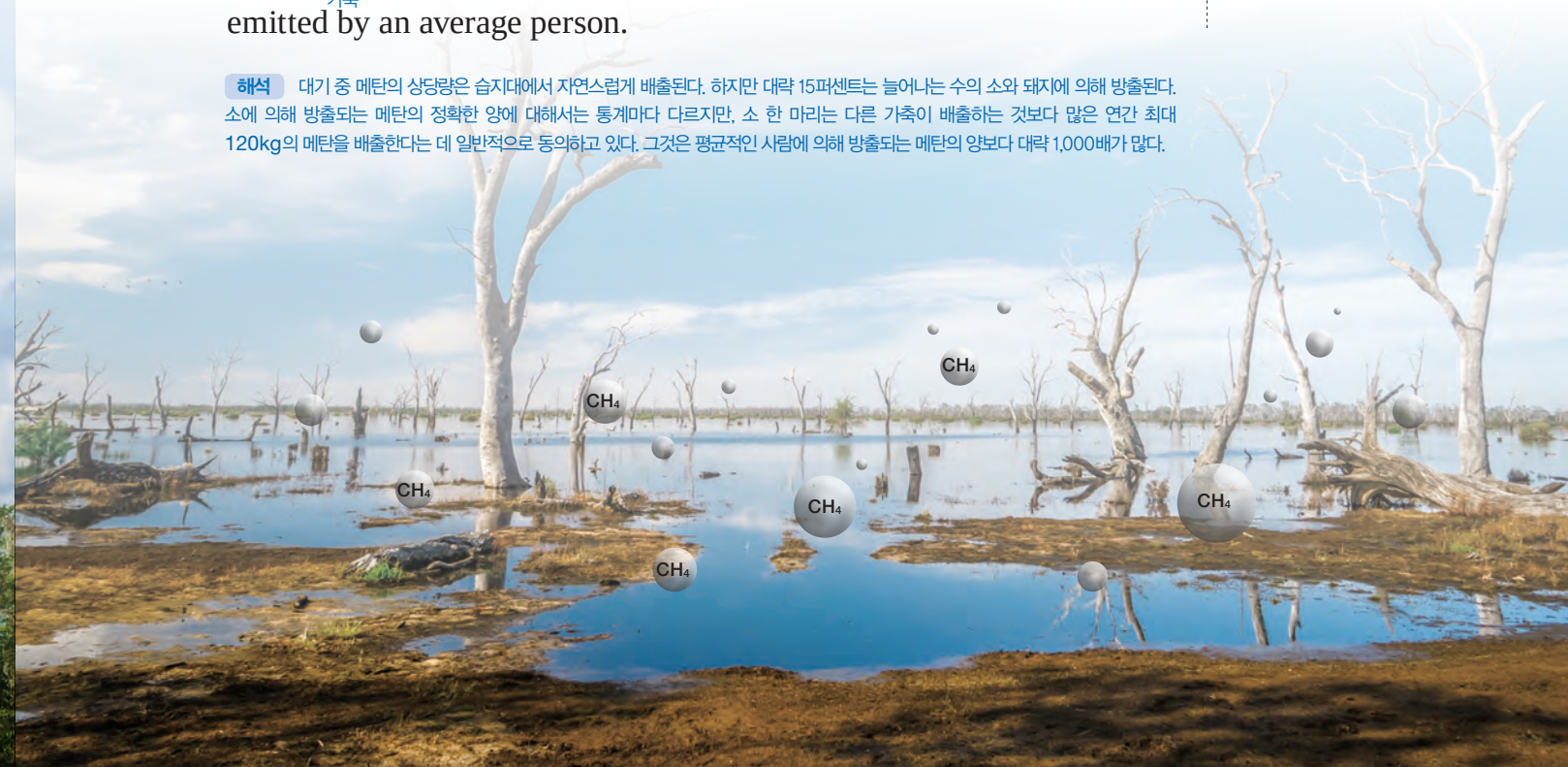
Figure 2 Methane emissions in weight per animal/human per year (source: NASA's Goddard Institute for Space Science (2006))

- Methane Emissions in Weight -

Much of the methane in the atmosphere is released naturally in damp areas. However, about 15 percent is emitted by the growing number of cows and pigs. Statistics vary about the exact amount of methane emitted by a cow, but it is generally agreed that a single cow releases up to 120 kilograms of methane per year, more than any other domestic animal. That is about 1,000 times the amount of methane emitted by an average person.

- release
- damp
- emit
- statistics

해석 대기 중 메탄의 상당량은 습지에서 자연스럽게 배출된다. 하지만 대략 15퍼센트는 늘어나는 수의 소와 돼지에 의해 배출된다. 소에 의해 배출되는 메탄의 정확한 양에 대해서는 통계마다 다르지만, 소 한 마리는 다른 가축이 배출하는 것보다 많은 연간 최대 120kg의 메탄을 배출한다는 데 일반적으로 동의하고 있다. 그것은 평균적인 사람에 의해 배출되는 메탄의 양보다 대략 1,000배가 많다.



Q8 How about you? Do you think cows are responsible for global warming? If yes, why? If no, why not?

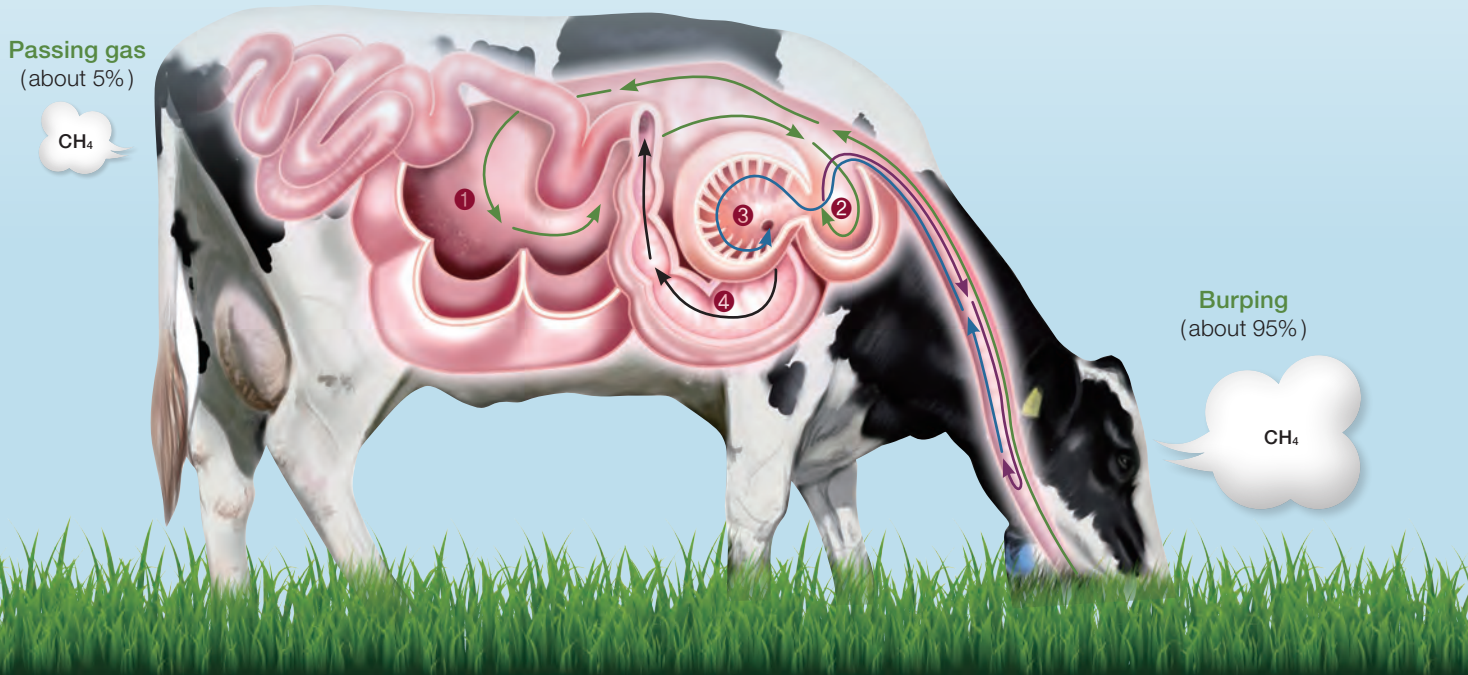
Sample I don't think cows are responsible. It is humans who are responsible for global warming.

- digestive
- break down
- burp
- pass gas
- give off

Methane is produced in a cow's special digestive system. A cow has a stomach with four rooms to break down the food it eats. The food digested in the first two rooms is sent to the mouth to be chewed again, and then sent to the third and the fourth rooms. A cow does this for about eight hours on average every day during which it keeps burping and passing gas, giving off methane into the atmosphere. Imagine the enormous amount of methane emitted from the burping mouths of 1.5 billion cows on six continents.

해석 메탄은 소의 특별한 소화기 계통에서 만들어진다. 소는 먹는 음식을 분해하기 위해 4개의 방이 있는 위를 지니고 있다. 첫 두 방에서 소화된 음식은 다시 씹도록 입으로 보내지고, 그런 다음 세 번째와 네 번째 방으로 보내진다. 소는 매일 평균적으로 약 8시간 동안 이것을 하며 그러는 동안 계속해서 트림하고 방귀를 끼고 메탄을 대기 중으로 방출한다. 여섯 대륙에서 15억 마리 소의 트림하는 입에서 방출되는 메탄의 엄청난 양을 상상해 보라.

Figure 3 This picture shows how the food travels within a cow's digestive system. About 95 percent of methane emitted by a cow comes out from its mouth as burp.



Q9 What does *this* in line 4 refer to?

- ✓ **a** the digestion process **b** burping and passing gas

Q10 What does the author try to stress through the last sentence of this page?

- a** the complexity of cows' digestive mechanism ✓ **b** the seriousness of methane emissions by cows

The world's livestock industries are growing at an unprecedented rate due to population growth and rising incomes. The world's population is predicted to reach around nine billion by 2050. Koreans ate an average of 11 kilograms of meat per person in 1980, but the average increased to 51 kilograms in 2014. As people prefer increased animal protein in their meals, our land, rivers, and oceans are bound to suffer with no solution in sight. Maybe it is time we give our diets a second thought.

- unprecedented
- protein [próuti:n]
- be bound to
- give a second thought

해석 세계의 가축 산업은 인구 증가와 소득 증가로 인해 전례 없는 속도로 성장하고 있다. 세계의 인구는 2050년까지 대략 90억 명에 도달할 것으로 예측된다. 한국인들은 1980년에 1인당 평균 11kg의 육류를 소비했지만, 2014년에는 평균이 51kg으로 증가했다. 사람들이 그들의 식사에서 늘어난 동물 단백질을 선호함에 따라, 우리의 땅, 강, 바다는 해결책이 보이지 않는 상태에서 서식할 수밖에 없다. 아마도 이제는 우리의 식습관을 다시 한 번 돌아볼 때이다.

More & More <It's time (that) 주어 + (should) + 동사 원형>은 '당위의 의미를 동반하고 있다. <It's time (that) + 주어 + 동사 과거형> 형태로 쓸 때는 '습관' 의미일 때이다.
ex) **It's time that you got up.** 너 일어날 시간이야. (예전에도 습관적으로 그 시간에 일어났음.)

Teaching Tips 본문 수업 후 과제로 내어 주어 다시 읽고 시간을 기록해 오도록 지도한다.

Plus+ Further Questions for Reading (p.200 in Teacher's Material)

Self-check

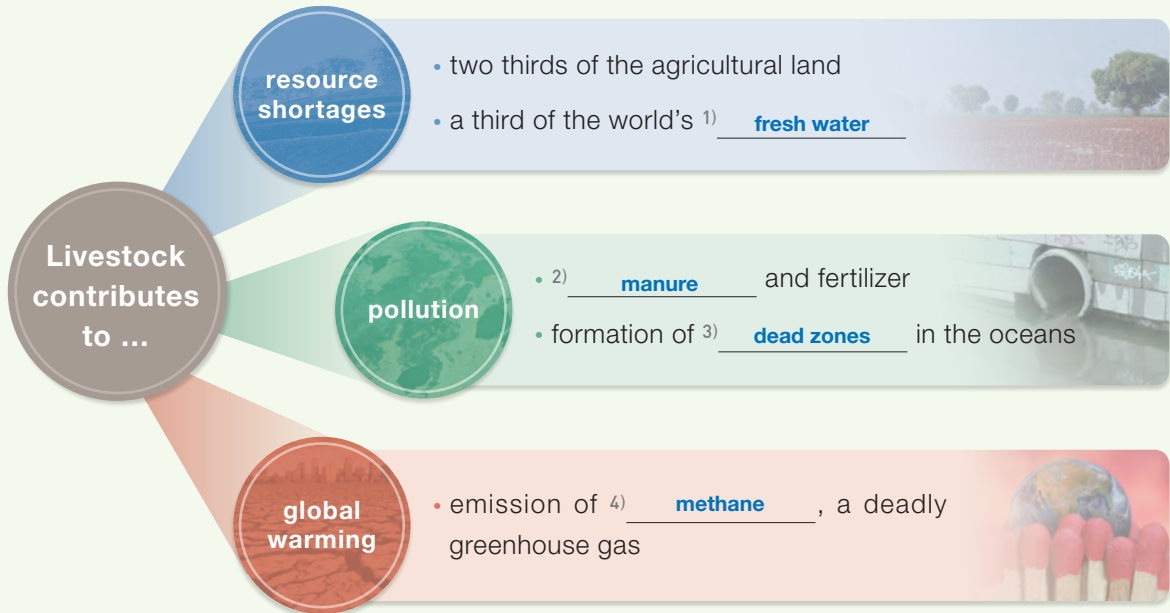
- | | |
|--|-----|
| I understand the author's point of view. | / 5 |
| I kept a balanced view of the subject. | / 5 |
- Read the text again and record your reading time.
2nd ____ min. ____ sec.
 - **Read More!** Go to page 151.

Q11 What is the author's attitude toward the livestock industry?

- a defensive ☒ b critical c positive d sympathetic

After You Read

A Factory farming of livestock has negative impacts on the environment. Complete the following.



WORDS

manure

fresh water

methane

dead zones

Teaching Tips 도표를 완성한 후 각자 완성된 요약 내용을 바탕으로 본문의 내용을 요약하여 말해 보게 지도한다. 학생 중 몇몇을 학급 앞에서 발표해 보게 할 수 있다.

B Check T for true and F for false.

- The growing global demand for meat leads the livestock industry to depend on large-scale farming. T ☒ F ☐
p.126 2~4행 참조
- Less agricultural land is used to grow food for livestock than for humans. T ☐ F ☒
p.127 2~4행 참조
- Dead zones occur when there are too many small plants living in the water and the oxygen level is too low. T ☒ F ☐
p.129 6~7행 참조
- Carbon dioxide is as strong as methane in trapping the heat from the sun. T ☐ F ☒
p.130 8~10행 참조

**C**

Growing demand for meat creates many problems. What is your opinion on the following statement? State your position and write your ideas.



We Should Stop Eating Meat

☐ **Agree**

- Eating meat eventually contributes to pollution and global warming.
- There are many sources of protein other than meat.
- _____
your own

☐ **Disagree**

- Meat is the main source of protein in people's diet.
- Meat tastes better than vegetables.
- _____
your own

Sample Eating meat can bring more health-related problems. / Still, many livestock farms try to reduce the environmental impact of waste produced by animals.

**D**

Find a partner with a different opinion from you. Then talk with your partner about whether we should stop eating meat or not.

Example

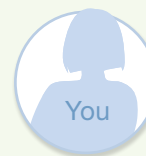
- A** I strongly believe that we should stop eating meat. Eating meat eventually contributes to polluting the environment.
- B** That's a good point, but meat is the main source of protein, especially for children.
- A** You may be right. However, there are many other sources of protein such as fish.

⋮

I believe that we ~



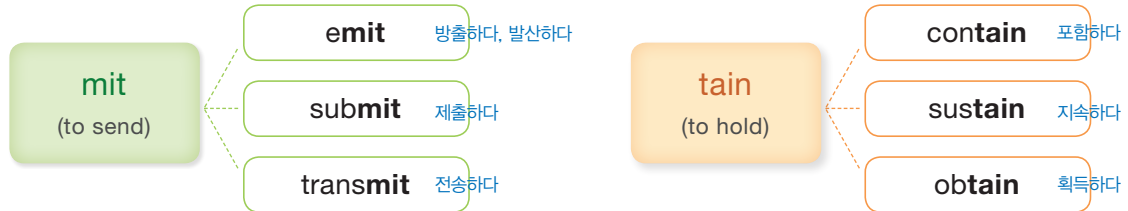
I see your point, but ~



Speaking Tips showing disagreement

That's a good point, but ~ / You may be right, but ~ / I see your point, but ~ / I think it'd be better to consider ~

A Word Forms



Complete each sentence with a word from above. Change the form if necessary.

- The light and heat that the Sun emits make the Earth a suitable place for life.
- Drinking too many soft drinks hurts your health because they contain a lot of sugar.
- The control signals from a separate machine are transmitted to the satellite orbiting overhead.
통제 신호, 관제 신호 형 별개의 궤도를 돌다
- Reading books is the most efficient way to obtain information and increase vocabulary.

More Sentences

- We have to **submit** our report before the deadline.
- Our economy will **sustain** its growth due to its strong domestic consumption.

B Expressions in Use

- **be responsible for** to be blamed for something or to cause something to happen
~의 원인이다. ~에 책임이 있다
- **give off** to release something such as smoke, a noise, a fragrance, etc.
발산하다, 방출하다
- **be bound to** to be certain to do something or to be likely to happen
~할 수밖에 없다. 반드시 ~하다

Complete each sentence with an expression from above. Change the form if necessary.

- When some food goes bad, it gives off an awful smell.
- He is bound to acknowledge his guilt because there is abundant evidence.
유죄
- Smoking is responsible for several diseases such as lung cancer and heart disease.
폐암

✔ **Self-check** Make your own sentence, using one of the expressions above.

Plus+ Vocabulary Test (p.203 in Teacher's Material)

C Grammar in Use

▶ <부분사 + of + 명사>

주어가 <부분을 나타내는 말 + of + 명사> 형태일 때, 동사는 of 다음의 명사의 수에 일치시킨다. 즉, 명사가 셀 수 있는 복수명사라면 동사는 복수동사로, 셀 수 없는 단수명사라면 단수동사로 일치시킨다. 부분을 나타내는 말에는 all, most, half, some, the rest, 분수 등이 있다.

ex) About **fifty percent** of the tourists **are** from China.

About **fifty percent** of the land **is** bought by Chinese people.

Link 스마트 교수자료
(문법 PPT)

Point 1

- Merely **eight percent** of the agricultural land **is** used to grow food for direct human consumption.
- About **one third** of the world's fresh water **is** used for meat production.

cf. Two thirds of the **bread is** rotten. / Two thirds of the **apples are** rotten.

Find two grammatical errors in the conversation and correct them.

- A Why are you wearing a hygiene mask?
 B Why are you not? Half of my classmates wears one.
 → **wear**
 A Really? What for?
 B To protect my throat. Haven't you heard about the micro-dust in the air?
 → **미세먼지**
 A Yeah, I've heard that about fifty percent of the dust originate from abroad. It's time to take action.
 → **originates**

▶ <be said(predicted) to + 동사원형>

본래 '사람들이 ~라고 ~한다'와 같이 일반적으로 알려진 사실을 전달할 때 쓰는 형태이다. <주어 + be said/predicted + to부정사>의 형태는 <It is said/predicted that + 주어 + 동사>로 바꾸어 표현할 수 있으며, <People(They) say/predict that + 주어 + 동사>의 의미를 나타낸다. 앞선 시제의 일은 완료부정사 <to have p.p.>를 사용한다.

ex) People **say that** Sam is very honest. = Sam **is said to be** very honest.

= **It is said that** Sam is very honest.

Link 스마트 교수자료
(문법 PPT)

Point 2

- Livestock **is said to** produce 130 times as much manure as humans.
 (→ **It is said that** livestock produces 130 times as much manure as humans.)
 (→ **They say that** livestock produces 130 times as much manure as humans.)
- The world's population **is predicted to** reach around nine billion by 2050.
 (→ **It is predicted that** the world's population will reach around nine billion by 2050.)

cf. He is said to have done many great things. → It is said that he did many great things.

✓ **Self-check** Skim through page 151 and underline the sentence with the structure above.

Teaching Tips 151쪽의 Read More!를 읽으며 해당 문법을 찾아보게 지도한다.

Reshuffle the words in parentheses to complete each conversation.

- 1 A Why do many Koreans hate the number 4?
 B That's because the number 4 (believed / is / to / bad luck / bring) in Korea.
 → **is believed to bring bad luck**
- 2 A Is it true that people in Korea consider General Yi Sunsin a national hero?
 B Yes. He (known / have / to / devoted / is) his life to saving the nation.
 → **is known to have devoted**
 A That's why there are many statues that honor him in Korea.

Plus+ Grammar Worksheet (p.204 in Teacher's Material)

A Get Ideas

Look through the poster below and fill in the blank at the bottom.

배경지식 탄소 발자국(carbon footprint)
개인이나 단체가 직간접적으로 발생시키는 온실가스의 총량으로,
우리가 일상생활을 하며 배출하는 탄소의 양을 한눈에 볼 수 있도록 표시한 것이다.

SAVE IT BEFORE YOU NEED IT!

Everything you eat or use requires water to be produced. You use much more water than you may realize. Just an apple uses up 125 liters of water!

Item	Weight	Water Footprint
Potatoes	1 kg	287 ℓ
Coffee	125 mL	130 ℓ
Leather	1 kg	17,000 ℓ
Jeans	1 kg	11,000 ℓ
Apple	150 g	125 ℓ
Pizza	1 kg	1,260 ℓ
Chicken	1 kg	4,300 ℓ
Beef	1 kg	15,400 ℓ

물 발자국
The water footprint of a product is the total amount of water used in all stages of the production chain before it gets to you. It was introduced to help people reduce their excessive consumption of products and thus their water spending. **생산 사슬** **과도한**

<source: www.waterfootprint.org>

Teaching Tips 포스터를 완성한 후 포스터에 대해 자유롭게 대화해 보게 한다.

- A Did you know what the water footprint is?
B No, I didn't. By looking at the poster, I've realized that I use too much water.
A It was shocking to know that consumption of products involves consumption of water.

B Organize Ideas

Answer the following questions based on the information in the poster above.

- Why was the concept of the water footprint introduced?
→ The water footprint was introduced to help people realize that everything they eat or use requires water to be produced.
- Suppose you threw away your old jeans and bought a new pair. How much water is consumed?
→ For the two pairs of jeans, over 20,000 liters of water is consumed.
- How much water is needed to produce one kilogram of beef?
→ A kilogram of beef requires more than 15,000 liters of water to be produced.
- What would excessive consumption of products lead to?
→ It could lead to waste of water.

C Write

Write a newspaper article to raise people's awareness of the water footprint.

No. 25,196
THE GREEN PAPER
SEOUL, Tuesday, July 7th, 2020

Help Our Thirsty Planet!

by _____



SEOUL, Korea – Few know that our daily consumption of food and products involves a huge amount of water. The water footprint of products was introduced to _____

_____ use requires water to be produced _____

To produce just one kilogram of beef, more than _____ 15,000 liters of water is used. If you throw away your old jeans and buy a pair of jeans that are trendy nowadays, you end up consuming _____ over 20,000 liters of water _____

_____ . If you eat _____ an apple _____ , _____ it leads to the _____ plus _____ consumption of 125 liters of water _____

Everyone should be aware of the water footprints of products they consume and keep in mind that _____ we should try to save water _____

Every drop counts!

name

purpose of water footprint

causes & effects

conclusion

Writing Tips describing causes & effects

you end up ~ / it leads to ~ / it results in ~

해석 갈증 난 우리 행성을 도움시다!

음식과 상품의 일상적인 소비가 엄청난 양의 물을 수반한다는 사실을 아는 사람들은 거의 없습니다. 상품의 물 발자국은 사람들이 먹고 사용하는 모든 것이 생산되기 위해서는 물이 필요하다는 사실을 깨닫게 하기 위해 도입되었습니다. 단지 1kg의 소고기를 생산하기 위해 15,000리터 이상의 물이 사용됩니다. 만약 오래된 청바지를 버리고 요즘 유행하는 청바지 한 벌을 구입한다면, 여러분은 결국 20,000리터 이상의 물을 사용하는 셈입니다. 사과 하나를 먹으면, 그것은 125리터의 물 소비를 초래합니다. 모든 사람은 자신이 소비하는 상품의 물 발자국을 인식하고 물을 아끼려고 노력해야 한다는 사실을 명심해야 합니다. 한 방울 한 방울이 모두 소중합니다!

Peer-check

STEP 1 Exchange books and evaluate your partner's article. Leave comments where necessary.

Is the article convincing overall?	/ 5
Are the figures correct?	/ 5
Does the article conclude well?	/ 5

STEP 2 Revise your article based on your partner's feedback.



A Listen and answer the questions.

- 1 Why did the speaker choose this topic for her assignment?
 - ① Recent human efforts to protect the Galapagos Islands have failed.
 - ✓ ② The Galapagos Islands are where Darwin's theory of evolution was born. 진화설
 - ③ The unique creatures of the Galapagos Islands can be found nowhere else.
 - ④ A natural laboratory has been constructed for scientists in the Galapagos Islands.

2 Which of the following can be inferred from the dialog?

- ① The city doesn't provide a battery recycling service.
- ② The man is against the use of rechargeable batteries. 충전용 건전지
- ✓ ③ The woman's clock currently runs on regular batteries.
- ④ Neither speaker is aware of the danger of rechargeable batteries.

1 W Folks, I did some research on the Galapagos Islands for my homework assignment. I chose this topic because Darwin's theory of evolution was born there. The Galapagos Islands are home to a wealth of rare plants and animals found nowhere else, so the Islands are a living laboratory for scientists. However, concerns grow as the Islands' ecosystem is threatened these days. Those threats include illegal fishing, the introduction of non-native species, and the growing demands of more than 160,000 tourists per year. All these factors make the lives of the Islands' native animals harder than ever, too. **That's a pity,** isn't it? It is no doubt that the Islands should be protected.

2 M Hey, what are you doing with that clock?

W The batteries are dead, and I'm replacing them with new ones.

M You're not using rechargeable batteries? You can save money and energy if you use them.

W Yeah, I was thinking about switching from traditional batteries.

M Good idea.

W By the way, **do you know how to** recycle rechargeable batteries when they're dead?

M I heard that there are many collection sites all over the city. Visit the city homepage and it will tell you where the closest site is.

W All right. I'll pick up some rechargeable batteries soon. Thanks.



B Put the sentences in order and practice the dialog with your partner.

3

- 1 I received my energy bill recently, and I almost cried.
- 3 I have no idea. I have to do something. Do you know how to save energy at home?
- 2 That's a pity! Do you have any idea why you got such a high energy bill?
- 4 Why don't you switch off or unplug any devices you don't need?
- 5 That's a good idea. I should give it a try.
- 6 A small action can make a big difference.



Teaching Tips 대화를 완성한 후 완성된 대화를 바탕으로 파트너와 직접 대화를 해 보도록 지도한다. 이때, 문장을 보며 읽기보다는 내용의 흐름에 주목해서 자신의 말로 대화를 나눌 수 있도록 지도한다.



C Read the passage and answer the questions.

When rain comes, manure is washed away with the runoff, polluting nearby soil, streams, and rivers all the way until it reaches the ocean. (A) Concentrated levels of nutrients in water result in the blooming of algae, which are simple forms of water plants. (B) Once it reaches the ocean, it contributes to the formation of what is known as a “dead zone.” (C) When too many plants grow in the water, they use up the ocean’s oxygen, suffocating other plants and animals.

4 Put the sentences (A), (B) and (C) in the correct order. (B) – (A) – (C)

해설 가축 배설물이 섞인 물이 바다에 도착 → 죽음의 해역을 형성시킴 → 죽음의 해역에 대한 설명(해조류가 급격히 상승 → 산소의 고갈로 해양 생물 질식)

5 What is the passage mainly about?

- ✓ ① how dead zones are formed
- ② the role of algae in forming dead zones
- ③ what happens when the oxygen level in water is low
- ④ the relationship between manure and rainwater



D Read the passage and write your answers.

The world’s livestock industries are growing at an unprecedented rate due to population growth and rising incomes. It is predicted that the world’s population will reach around nine billion by 2050. Koreans ate an average of 11 kilograms of meat per person in 1980, but the average increased to 51 kilograms in 2014. As people prefer increased animal protein in their meals, our land, rivers, and oceans are bound to suffer with no solution in sight. Maybe it is time we give our diets a second thought.

6 Fill in the blank to rewrite the underlined sentence.

The world’s population is predicted to reach around nine billion by 2050.

7 Fill in the blanks using the words in the passage.

Population growth and rising incomes will result in the growth of the world’s livestock industries.

✓ Self-check Which question(s) did you miss?

Listening	Speaking	Reading	Writing
1	2	3	4
5	6	7	

What do you need to review?:

My Learning Log

Looking back at what I learned in this lesson will help me become a better learner!

Look through the Self-checks and Peer-checks, and rate your learning below.



My Learning

I have learned that livestock industry affects the environment in many ways.



I understand that we have to be aware of the value of limited natural resources.



Overall, this lesson motivates me to become more environmentally conscious.



- ▶ What has changed the most in your attitude toward the environment after studying this lesson?
- ex) *My own consumption patterns can have great impacts on the environment. I will make wise choices about what I eat and buy.*

Sample I'll always use a travel mug or carry a reusable water bottle when I go out.



My Attitude

Did I try to understand the various causes and effects in the text?



Did I try to keep a balanced view about the way the subject of the text is dealt with?



Did I listen carefully to my classmates during the activities?

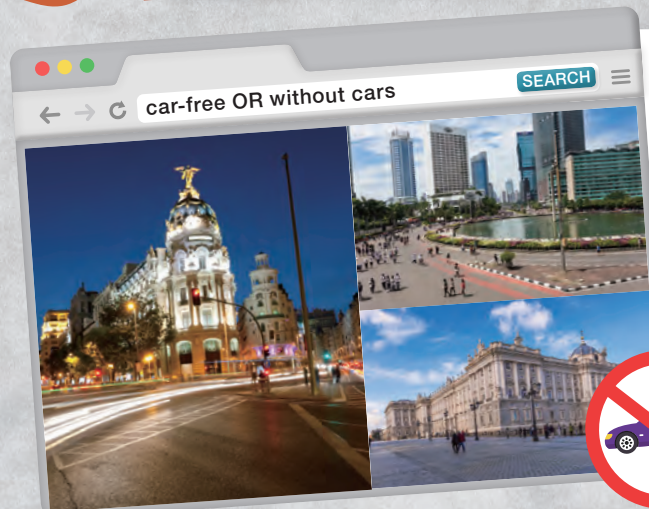


- ▶ What will you do differently next time?
- ex) *When I run into new information, I will try to get more details of the information through the Internet.*

Sample I will try to read a texts more critically. It will be better not to take the given text at its face value but to evaluate the arguments carefully.

10차시
수업 자료

스마트 교수자료



100% energy self-sufficient



자급자족할 수 있는

Where Samso Island, Denmark

What's special ^{삼소섬} With its electricity generated by sustainable ^{지속 가능한 에너지원} sources of energy, mostly by wind farms, the island is known as the world's first energy self-sufficient island. The wind farms are ^{풍력 발전 지역} owned by the locals themselves, which makes this island truly the world's top green island.



10
차
시

A heaven for wildlife



Where Kangaroo Island, South Australia

What's special As the third largest island in Australia, the island has many national parks. It is internationally famous for its spectacular landscapes and amazing diversity of wildlife. Some 40,000 locals ^{현지인} on the island live their lives in harmony with the wild animals and rare plants.



City Madrid **Nation** Spain

What's special If you drive a car into the center of the city,
you will be fined.



Internet Search Tips OR Search

When you want to find information that deals with X or Y, you can use OR between the search words.

ex car-free OR without cars