UNIT 1

Overview

WARMING UP | BACKGROUND READING | INTENSIVE READING

Learning Objectives

After studying this unit, you will be able to:

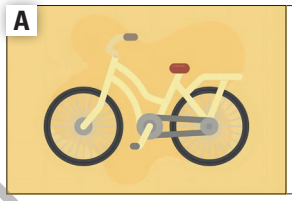
- talk about carbon neutrality and its impact on people's lives
- discuss China's efforts and achievements in the field of carbon neutrality
- explore future trends in carbon neutrality and understand the concept of "carbon-negative"
- connect personal actions with global efforts on carbon neutrality and reflect on individual carbon footprint

READING INTO CHINA FURTHER READING

Warming Up

The pictures below show measures to reduce carbon emissions. Fill in the blanks to complete the description of each measure.

A



Cycle, walk, or take public 1 _____ whenever possible.

B

Take a(n) 2 _____ shower or bath and limit it to about 5-10 minutes.

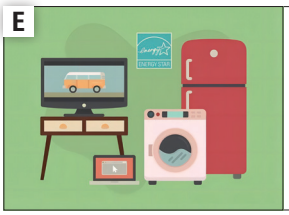
C

Many items made of paper, metal, or plastic can be 3 _____, so embrace the idea of reusing them.

D

Replace your lights with LED 4 _____.

E



Switching to energy-efficient 5 _____ helps households save electricity effortlessly.

Why carbon neutrality matters?

1 When we talk about being carbon neutral, we are referring to our actions aimed at **offsetting** or **minimizing** carbon dioxide emissions into the atmosphere. Carbon dioxide is a greenhouse gas that contributes to global warming. Therefore, achieving carbon neutrality requires first recognizing the problem, then gradually addressing the root cause. But we are **simplifying** the issue if we focus solely on carbon dioxide, as there are other greenhouse gases, some of which are even more damaging. These include methane, nitrous oxide, among others.

2 Where do all these gases come from? The first thing that usually springs to mind is pollution—like cars emitting exhaust fumes or power stations **belching** dirty smoke into the atmosphere. **Admittedly**, industrial society is producing greenhouse gases that trap heat in the atmosphere, causing glaciers to melt, and leading to extreme weather events such as heat waves, flooding, droughts, hurricanes, and tornadoes.

3 Although there is some debate, the scientific community widely recognizes global warming as a proven fact. They claim we are in the midst of the warmest period on Earth since the **inception** of global temperature records. Not only have global temperatures reached an all-time high, but they are also continuing to rise.

4 Whatever else you might argue, the current use of energy in some countries is completely **unsustainable** in some countries. For example, gasoline prices in Britain often hit seasonal peaks during summer as travel demand increases, while winter heating costs surge due to energy import reliance, exposing fragile supply chains and aging infrastructure. Fossil fuels are burned for energy at an ever-increasing rate, when the fuels themselves are beginning to decrease in **availability**. In fact, the energy reaching our planet from the sun in just 24 hours is more than all the fossil fuel energy we have ever burned in the history of mankind, but this huge resource goes **untapped** day by day. As fossil fuel **depletion** sets in, there simply won't be a choice—we will have to turn to renewable energy.

5 Broadly speaking, going carbon neutral means achieving net-zero emissions by **optimizing** energy **efficiency**, switching to cleaner fuels, generating renewable energy, and offsetting remaining emissions. This not only helps combat climate change but also strengthens our energy security, paving the way for a greener and more sustainable future.

Task 1 Words **Complete the following sentences with the words in the boxes.**

minimize　simplify　unsustainable　availability　depletion

1 By transitioning to renewable energy and adopting energy-efficient technologies, companies can _____ their carbon emissions and accelerate progress toward carbon neutrality.
2 The _____ of recycling bins in public places has greatly improved the ease of recycling and contributed to environmental protection.
3 Adopting simple lifestyle changes, such as reducing food waste and saving water, may help _____ eco-friendly practices, thereby decreasing our environmental footprint.
4 Excessive exploitation of resources leads to _____ development.
5 We cannot afford to wait for energy _____; proactive transition to alternative energy sources must begin now.

Task 2 Reading comprehension **Decide whether the following statements are true (T) or false (F).**

☐ 1 Carbon dioxide is the only greenhouse gas that contributes to global warming.
☐ 2 Industrial society produces greenhouse gases that trap heat in the atmosphere, causing glaciers to melt and leading to extreme weather events.
☐ 3 Global warming is not a scientific fact and is still up for debate.
☐ 4 Fossil fuel reserves are sufficient and will not cause an energy crisis.
☐ 5 Going carbon neutral is about becoming more sustainable by optimizing energy efficiency, using fuels that are less harmful to the environment, and offsetting remaining emissions.

Words & Expressions

Words

offset /ˈɒːfset/ *v.* 抵消，补偿
minimize /ˈmɪnəmaɪz/ *v.* 把……减至最小量
simplify /ˈsɪmplɪfaɪ/ *v.* 简化
belch /beltʃ/ *v.* （大量）喷出
admittedly /ədˈmɪtɪdli/ *adv.* 诚然，确实
inception /ɪnˈsepʃən/ *n.* 开端
unsustainable /ˌʌnsəˈsteɪnəbəl/ *adj.* 不能继续的，无法维持的
availability /əˌveɪləˈbɪləti/ *n.* 可用，可得到
untapped /ˌʌnˈtæpt/ *adj.* 未开发的，未利用的
depletion /dɪˈpliːʃən/ *n.* 损耗
optimize /ˈɑːptəmaɪz/ *v.* 使最优化，使尽量有效
efficiency /ɪˈfɪʃənsi/ *n.* 效率，效能

Expressions

carbon neutrality 碳中和
refer to 指的是
spring to mind 马上想到
heat wave 热浪
set in （尤指不愉快的事）开始，来临
switch to 转换，转变

Notes

1. greenhouse gas：温室气体。指能引起温室效应的气体，包括二氧化碳、甲烷、氧化亚氮等，可缩写为 GHG。化石燃料燃烧、农业和畜牧业、垃圾处理等都会向大气中排放温室气体。
2. methane：甲烷。指一种主要由稻田和湿地释放出来的温室气体。
3. nitrous oxide：氧化亚氮。指一种重要的温室气体，主要来自含氮化合物在微生物作用下的分解。

Carbon foodprint: From production to consumption

1 Carbon foodprint—food's carbon footprint—refers to the greenhouse gas emissions generated by global food systems. It measures the emissions produced at each stage of food's journey—from farm to fork to landfill. Many steps in food production, such as growing, **rearing**, farming, processing, and transporting, contribute significantly to greenhouse gas emissions but are less visible to consumers due to their indirect nature. In contrast, consumption activities like cooking, storing food in refrigeration, and food waste **disposal** are more direct and **observable**, making them easier to track and calculate as part of the carbon footprint of food. Together, production and consumption activities provide a **comprehensive** picture of food's impact on the environment.

2 Agriculture, Forestry, and Other Land Use (AFOLU) activities cause about 20% to 25% of net global greenhouse gas emissions, mainly due to **deforestation** for farms and livestock. These harmful practices **exemplify** why sustainable farming is so important. The way we produce food has a huge impact on the environment. For instance, intensive farming practices can lead to deforestation, **biodiversity** loss, and soil **degradation**, while sustainable agriculture—such as crop **rotation** and **agroforestry**—can help preserve these vital resources. Realizing the impact of farming practices is not just a matter of personal choice. **Embracing** sustainable methods serves as a bridge between humanity's personal well-being and our planet's ecological well-being.

3 The food we eat could have a significant impact on our carbon footprint. Generally, **ruminant** meat consumption has a far higher environmental impact compared to plant-based food consumption, which is known for its minimal ecological footprint. Adopting a diet that relies less on single food sources, such as eating less meat and including more diverse plant-based foods, is an important step toward sustainable food systems. A balanced dietary approach, informed by environmental awareness, can help navigate the complex relationship between food, health, and the environment. Only through this lens of balance can we truly appreciate the **transformative** power of our food choices—reducing environmental pressures while promoting healthier lifestyles.

4 Since the way food is produced and consumed has a profound impact on the planet's resources and **ecosystems**, it is a **pivotal** moment in our collective journey toward sustainability, where each choice we make can **ripple** through the fabric of our environment.

Words & Expressions

Words

rear /rɪr/ *v.* 饲养
disposal /dɪˈspoʊzəl/ *n.* 处理
observable /əbˈzɜːrvəbəl/ *adj.* 看得见的，能观察到的
comprehensive /ˌkɑːmprɪˈhensɪv/ *adj.* 全面的，详尽的
deforestation /diːˌfɔːrəˈsteɪʃən/ *n.* 砍伐树林，毁林
exemplify /ɪgˈzemplɪfaɪ/ *v.* 举例说明
biodiversity /ˌbaɪoʊdaɪˈvɜːrsəti/ *n.* 生物多样性
degradation /ˌdegrəˈdeɪʃən/ *n.* 退化，恶化
rotation /roʊˈteɪʃən/ *n.* 轮换，交替
agroforestry /ˌægroʊˈfɔːrəstri/ *n.* 复合农林业
embrace /ɪmˈbreɪs/ *v.* 欣然接受，乐意采纳
ruminant /ˈruːmɪnənt/ *n.* 反刍动物
transformative /trænsˈfɔːrmətɪv/ *adj.* 改变的，改革的
ecosystem /ˈiːkoʊˌsɪstɪm/ *n.* 生态系统
pivotal /ˈpɪvətəl/ *adj.* 关键性的，核心的
ripple /ˈrɪpəl/ *v.* 传开，（使）起涟漪

Expressions

Agriculture, Forestry, and Other Land Use (AFOLU) 农业、林业和其他土地利用
have an impact on 对……产生影响

Note

carbon foodprint：碳食迹 / 食物碳足迹。它是基于 carbon footprint 的新创短语，指个人、组织和国家等实体的食物需求所引发的温室气体排放。

Intensive Reading

Task 1 Words Complete the following sentences with the words in brackets. Change the form when necessary.

1 The adoption of renewable energy sources is a _____ step toward a more sustainable and environmentally friendly future. (transform)

2 Solar-powered lighting systems _____ how clean energy could improve daily life without harming the environment. (exemplify)

3 Technological innovation plays a _____ role in achieving carbon neutrality by using more renewable energy and creating better carbon capture tools. (pivot)

4 In pursuit of carbon neutrality, sustainable _____ methods for livestock are crucial for reducing methane emissions. (rear)

5 Small acts of environmental protection, like community tree planting, can _____ through society, inspiring broader climate action. (ripple)

Task 2 Reading comprehension Decide whether the following statements are true (T) or false (F).

☐ 1 The term "carbon foodprint" only includes emissions from food production, not consumption.

☐ 2 AFOLU activities account for over 30% of global greenhouse gas emissions.

☐ 3 Crop rotation is mentioned as an example of sustainable agriculture.

☐ 4 Plant-based foods generally have a larger ecological footprint than ruminant meat.

☐ 5 The text suggests that individual food choices cannot significantly impact environmental sustainability.

Task 3 Grammar **Understand how partial inverted sentences are structured and rewrite the given sentences into partial inverted ones.**

1 We can neither ignore the environmental impact of our daily activities nor fail to take action to reduce our carbon footprint.

_____

2 The community didn't greatly reduce its carbon emissions until the carbon offset program was launched.

_____

3 We have rarely seen such a successful carbon capture and storage project as this one.

_____

4 The region has been able to absorb more carbon only through extensive reforestation efforts.

_____

Task 4 Memo writing **Write a short memo of about 100 words to your team, explaining the concept of carbon foodprint and proposing actions to reduce it.**

Reducing carbon foodprint

- **Introduction**
  Briefly explain what the term "carbon foodprint" means and why it matters.
- **Main Content**
  Summarize the key activities in production and consumption that contribute to carbon foodprint.
- **Conclusion**
  Suggest practical actions your team can take to reduce carbon foodprint.

Tips

部分倒装是调整语序的核心句法策略之一，通常将谓语的一部分提到主语前面，即助动词或情态动词提前。

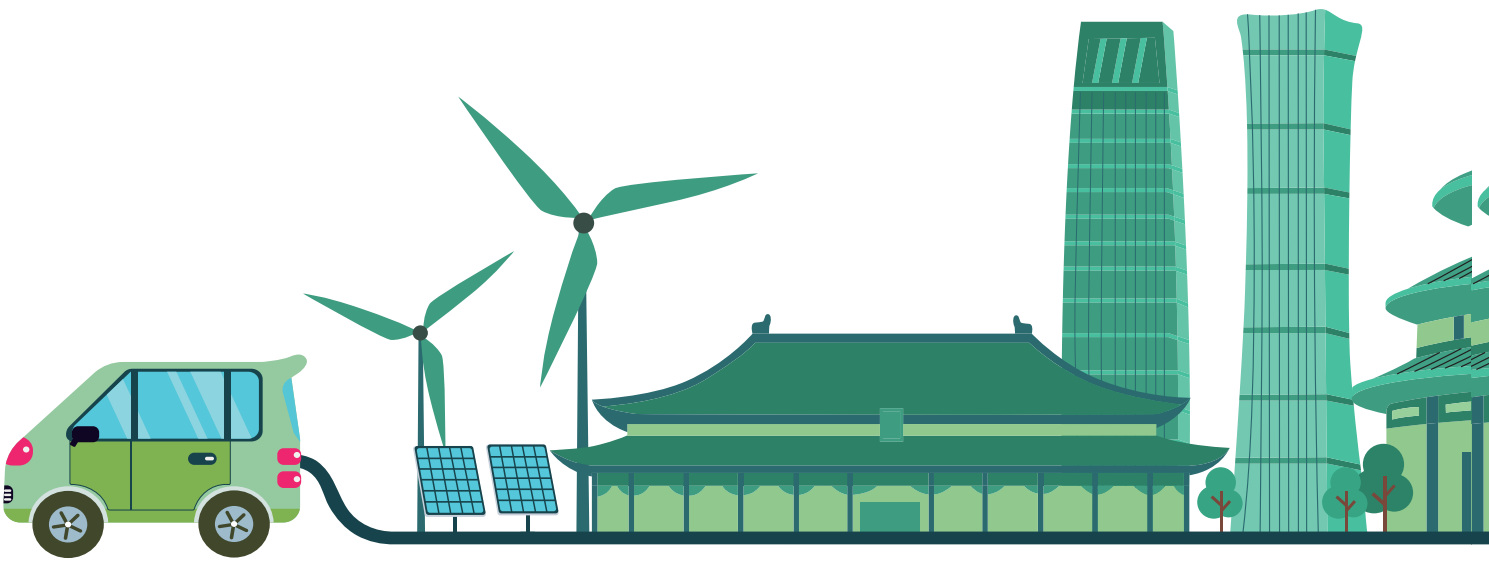
1. 否定副词，如 neither, nor, never, nowhere, not only, hardly, no sooner, rarely, scarcely, seldom，或者具有否定意义的限制词，如 little, less, only 等，位于句首时需要部分倒装。
2. 部分倒装的主要目的是保持上下文连贯、突出重点或加强语气等。如：
   Only through this lens of balance can we truly appreciate the transformative power of our food choices.
3. 使用部分倒装时，应确保句式自然流畅，避免因过度使用而造成理解困难。

China's road to carbon neutrality

1 China's **commitment** to achieve carbon neutrality by 2060 reflects a long-term vision for collective action to limit the global temperature rise. This commitment highlights its **determination** to invest in clean energy and sustainable development, and underscores its role as a major force in the global fight against climate change.

2 China is taking immediate action to align with the Paris Agreement's climate goals, aiming to significantly reduce greenhouse gas emissions. It is developing new technologies and enhancing public awareness of climate issues. Investments in many sectors have also been increased. Key initiatives include funding allocations to **decarbonize** the transportation sector through vehicle **electrification** and sustainable **aviation** fuels (SAF), combined with renewable energy expansion in the energy sector.

3 However, to achieve deeper emissions cuts, China will need to take even more challenging measures and further unlock emissions reduction potential through carbon removal technologies. In the energy sector, it must **boost** nuclear energy adoption by improving cost efficiency and safety standards. For heavy industries, the full **deployment** of carbon capture and storage (CCS) is critical for decarbonizing fossil-fuel-based power and heat generation. The transportation sector is supposed to phase out Internal Combustion Engine Vehicles (ICEVs) on a large scale and speed up the **commercialization** of hydrogen-powered aircraft through pilot projects and public-private partnerships. Meanwhile, the agricultural sector should reduce methane emissions from livestock and rice **paddies**. It should also expand carbon sinks through **afforestation**, wetland restoration, and climate-smart farming practices.



4 Now, China has emerged as a global leader in clean energy technology, taking practical measures with far-reaching global implications. By focusing on clean energy, China shows that effective climate action is possible. This not only creates a healthier environment and a sustainable future but also brings benefits to society. Reducing emissions helps improve public health, makes life better, and strengthens defenses against extreme weather events like droughts and floods. These changes also lead to economic benefits, such as lower healthcare costs, higher productivity, and less spending on disaster recovery. These efforts highlight the social and economic importance of China's actions to fight against climate change.

Words & Expressions

Words

commitment /kəˈmɪtmənt/ *n.* 承诺
determination /dɪˌtɜːrməˈneɪʃən/ *n.* 决心
decarbonize /diːˈkɑːrbəˌnaɪz/ *v.* 脱去……的碳
electrification /ɪˌlektrɪfɪˈkeɪʃən/ *n.* 电气化
aviation /ˌeɪviˈeɪʃən/ *n.* 航空
boost /buːst/ *v.* 促进，推动
deployment /dɪˈplɔɪmənt/ *n.* 利用
commercialization /kəˌmɜːrʃələˈzeɪʃən/ *n.* 商业化
paddy /ˈpædi/ *n.* 水稻田
afforestation /əˌfɔːrəˈsteɪʃən/ *n.* 植树造林

Expressions

align with 使一致
phase out 逐步停止使用，逐步淘汰
Internal Combustion Engine Vehicles (ICEVs) 内燃机汽车
on a large scale 大规模地

Notes

1. sustainable aviation fuel：可持续航空燃料。指以可再生资源或废弃物为原料制成的航空燃料，可缩写为 SAF。
2. carbon capture and storage：碳捕集与封存。指从大型稳定二氧化碳排放源中分离、收集二氧化碳，并用各种方法储存以避免其排放到大气中的一种技术，可缩写为 CCS。
3. carbon sink：碳汇。指吸收有机碳超出释放的系统或区域，如森林、海洋等。

Reading into China

Task 1 Reading comprehension **To achieve the desired emissions reduction, China needs to take more challenging measures in different sectors. There are 13 measures listed in the given box. Tick (√) those mentioned in the text and match them with their corresponding sectors.**

Measure box

- ☐ 1 switch to bioenergy
- ☐ 2 adopt an agricultural circular economy model
- ☐ 3 fully deploy carbon capture and storage
- ☐ 4 reduce reliance on road transportation
- ☐ 5 phase out ICEVs
- ☐ 6 develop intelligent manufacturing
- ☐ 7 boost nuclear energy adoption
- ☐ 8 implement fine-grained management of big data
- ☐ 9 reduce methane emissions
- ☐ 10 improve cost efficiency
- ☐ 11 expand carbon sinks
- ☐ 12 improve safety standards
- ☐ 13 speed up hydrogen-powered aircraft commercialization

Energy sector

Industrial sector

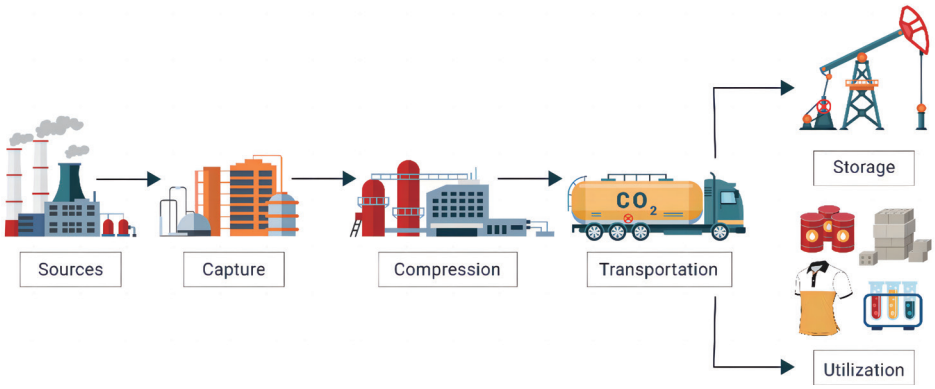
Transportation sector

Agricultural sector

Task 2 Writing **What can you do to help realize carbon neutrality? Discuss the question in groups and write an essay of about 200 words on the topic.**

Carbon neutrality is a global goal, and I am committed to playing my part…

Going carbon negative



1 With all the talk about becoming carbon neutral, some people may ask: Can we go past being carbon neutral and become carbon negative? The answer is not quite clear and definite, but understanding what it truly means to be carbon negative can help clarify (阐明) the concept.

2 Becoming carbon negative requires using methods to absorb and store carbon dioxide from the atmosphere through technological innovations and natural approaches. By removing more greenhouse gases than are emitted, this process achieves net-negative emissions.

3 How can we become carbon negative? One of the most common methods is to use carbon capture, utilization, and storage (CCUS, 碳捕集、利用与封存) technologies. These technologies remove existing carbon dioxide from the atmosphere. After capture, compression (压缩), and transportation, carbon dioxide is stored safely or repurposed for industrial applications. CCUS technologies play a significant role in achieving the energy industry's emissions reduction goals and turning carbon waste into high-value products like building materials and fuel. In addition, afforestation, which involves planting new forests, absorbs carbon dioxide from the atmosphere. These new trees not only help reduce carbon dioxide in the atmosphere, but also bring a variety of benefits at the ecological, economic, and social levels.

4 What does being carbon negative mean to us? First, it helps slow the rate of global warming. As human activity increases, so does the concentration (浓度) of carbon dioxide in the atmosphere, which poses a huge threat to the Earth's ecosystem. Being carbon negative provides an effective way to reduce the risk of climate change. Second, it also helps achieve sustainable development. Protecting forests not only stabilizes ecosystems but also delivers important environmental benefits: clean water, fertile soil, and fresh air. These things are essential for a strong economy in the future.

5 Going carbon negative requires two steps: cutting emissions substantially and removing more carbon dioxide than we release. Key solutions like CCUS and afforestation require global collaboration (合作). Though challenges exist, acting fast on both steps can help restore balance to our atmosphere.

Read the text and discuss the following questions.

1 How do technological and natural approaches help become carbon negative? Which method do you think is more practical?

2 How can countries with different economic levels work together toward a carbon negative future?