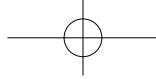
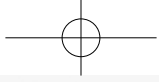


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# Unit 1

## Energy and Civilization

### Lead-in

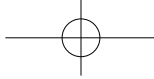
Energy is not only one of the major concerns of human beings nowadays, but a historically significant element in civilization. The history of human civilization, in one sense, can be seen as the history of energy development, from the primitive period to the industrial period, and finally to this highly technological era today. Do you know what major types of energy are consumed in each era? And how has people's life been shaped by energy?

In modern society, energy has become indispensable to people's life and has revolutionized their way of life. To understand energy's role in modern societies does not just involve the technological aspects. It requires an examination of the historical and cultural context. Can you name some of the cultural features of energy in the modern world?

### Learning objectives

Upon completion of this unit, you will be able to:

- talk about the evolution of energy consumption in human history;
- express the role and features of energy in modern society;
- define key terms in writing;
- write an introductory paragraph to an essay;
- report the changes in energy use through three generations of your family.



# Viewing and speaking

## Viewing



### New words

flirt /flɜ:t/ v. 谈情说爱  
 biomass /'baɪəʊ,mæʃ/ n. (用作燃料的) 生物质  
 nuclear /'nju:kliə/ a. 核能的  
 extract /ɪk'strækt/ v. 提取; 取出  
 decompose /,di:kəm'pəʊz/ v. 腐烂; 腐败  
 organism /'ɔ:gə,nɪz(ə)m/ n. 生物; 有机体  
 release /rɪ'li:z/ v. 释放

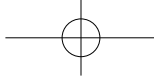
fusion /'fju:ʒn/ n. 融合; 聚变  
 depleted /dɪ'pli:tɪd/ a. 不足的; 减少的  
 deterioration /dɪ,tɪəriə'reɪʃn/ n. 恶化  
 replenish /rɪ'plenɪʃ/ v. 补充; 再充满  
 geothermal /,dʒi:əʊ'θɜ:məl/ a. 地热的  
 harness /'hɑ:nɪs/ v. 利用  
 famine /'fæmɪn/ n. 饥荒  
 reliant /rɪ'laɪənt/ a. 依赖的; 依靠的

**1** Watch the video clip and choose the best answer to each of the following questions.

- Which activity is NOT mentioned to illustrate the importance of energy in daily lives?  
 A) Working.    B) Traveling.    C) Eating.    D) Flying.
- The disadvantages of fossil fuels do NOT include \_\_\_\_\_.  
 A) depletion in decades    B) inconsistency and instability  
 C) air quality deterioration    D) global warming
- All the following are renewable energy resources EXCEPT \_\_\_\_\_.  
 A) tides    B) wind    C) nuclear    D) sunlight

**2** Watch the video clip again and fill in the blanks with what you hear.

- Fossil fuels include \_\_\_\_\_, oil and \_\_\_\_\_.
- As for the four major types of energy, fossil fuels consist of extracted \_\_\_\_\_ and plants of millions of years ago; biomass converts plants into \_\_\_\_\_ to produce energy; nuclear energy is released during \_\_\_\_\_; renewable energy comes from a source that's \_\_\_\_\_ when used, such as wind or solar power.
- Rather than a one-time-use resource, resources for renewable energy can \_\_\_\_\_ in human lifetime. We don't need to compromise the earth to harness it, nor do we have to rely on other nations for these resources, which may lead to \_\_\_\_\_, \_\_\_\_\_ and political instability.
- Presently the problem does not lie in technology, but in our \_\_\_\_\_ that is built around fossil fuel dependency. If we could convert it to \_\_\_\_\_, we will be able to rely on clean renewable energy.



## Speaking

- 1** Read the short passage aloud and pay attention to the idea about primary energy and secondary energy.

Renewable and non-renewable energy sources are considered primary energy sources because they appear in the natural environment and can be used directly. Different resources of primary energy fall into two main categories: fuels and flows. Fuels are materials which contain one form of energy that can be transformed into another form of energy. Flows are natural processes that have energy associated with movement. Using a flow means harnessing energy that comes from this movement like wind and tides. Primary energy is energy that has not been obtained by anthropogenic conversion or transformation. The term “anthropogenic” is related to human activity or human influence.

Primary energy is often converted to secondary energy for more convenient use in human systems. Secondary energy sources are produced from primary sources of energy and can be used to store and deliver energy in a useful form. Hydrogen and electricity are considered secondary sources of energy, or “carriers” of energy.

- 2** Work in pairs and answer the two questions.

- 1 What are primary energy sources? How does primary energy get its name?

---

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- 2 How would you define secondary energy based on the passage?

---

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- 3** Do some research on energy in the Industrial period, a topic you will find in the texts in this unit, and then prepare a one-minute oral presentation. Make sure the messages are properly delivered to the audience.

## Extensive reading

### Reading text

# Historical Per Capita Energy Consumption

- 1 The history of energy consumption shows how important energy is to the quality of life for each of us. Societies have depended on different types of energy in the past, and societies have been forced to change from one energy type to another. Global energy consumption can be put in perspective by considering the amount of energy consumed by individuals.
- 2 E. Cook (1971) provided estimates of daily human energy consumption at six different periods of societal development. Cook's estimates are given in Table 1.

Period	Era	Daily per capita consumption (1,000 kcal)				
		Food	H & C*	I & A**	Transportation	Total
Primitive	1 million BC	2				2
Hunting	100,000 BC	3	2			5
Primitive Agricultural	5000 BC	4	4	4		12
Advanced Agricultural	1400	6	12	7	1	26
Industrial	1875	7	32	24	14	77
Technological	1970	10	66	91	63	230

\*H & C = Home and Commerce    \*\*I & A = Industry and Agriculture

Table 1 Historical energy consumption (Cook, 1971)

The table shows that personal energy consumption has increased as society has evolved.

- 3 In ancient times, energy was consumed in the form of food. Cook assumed the only source of energy consumed by a person living during the period labeled "Primitive" was food. Energy is essential for life, and food was the first source of energy. According to Cook, humans require approximately 2,000 kilocalories



(about eight megajoules) of food per day. One food calorie is equal to one kilocalorie. One calorie is the amount of energy required to raise the temperature of one gram of water by one degree centigrade ( $^{\circ}\text{C}$ ). A change in temperature of  $1^{\circ}\text{C}$  is equal to a change in temperature of 1.8 degrees Fahrenheit ( $^{\circ}\text{F}$ ).

- 4 The ability to control fire during the Hunting period let people use wood to heat and cook. Fire provided light at night and could illuminate caves. Firewood was the first source of energy for consumption in a residential setting. Cook's estimate of the daily per capita energy consumption for Europeans about 100,000 years ago was 5,000 kilocalories (about 21 megajoules).
- 5 The Primitive Agricultural period was characterized by the domestication of animals. Humans were able to use animals to help them grow crops and cultivate their fields. The ability to grow more food than they needed became the impetus for creating an agricultural industry. Cook's estimate of the daily per capita energy consumption for people in the Fertile Crescent circa 5000 BC was 12,000 kilocalories (about 50 megajoules). Humans continue to use animals to perform work.
- 6 More energy was consumed during the Advanced Agricultural period when people learned to use coal, and built machines to harvest the wind and water. By the early Renaissance, people were using wind to push sailing ships, water to drive mills, and wood and coal for generating heat. Transportation became a significant component of energy consumption by humans. Cook's estimate of the daily per capita energy consumption for people in northwestern Europe circa 1400 was 26,000 kilocalories (about 109 megajoules).
- 7 The steam engine ushered in the Industrial period. It provided a means of transforming heat energy to mechanical energy. Wood was the first source of energy for generating steam in steam engines. Coal, a fossil fuel, eventually replaced wood and hay as the primary energy source in industrialized nations. Coal was easier to store and transport than wood and hay, which are bulky and awkward. Coal was useful as a fuel source for large vehicles, such as trains and ships, but of limited use for personal transportation. Oil, another fossil fuel, was a liquid and contained more energy per unit mass than coal. Oil could flow through pipelines and tanks. People just needed a machine to convert the energy in oil to a more useful form. Cook's estimate of the daily per capita energy consumption for people in England circa 1875 was 77,000 kilocalories (about 322 megajoules).
- 8 The modern Technological period is associated with the development of internal combustion engines, and applications of electricity. Internal combustion engines use oil and can vary widely in size. The internal combustion engine could be scaled to fit on a wagon and create "horseless carriages". The transportation



system in use today evolved as a result of the development of internal combustion engines. Electricity, by contrast, is generated from primary energy sources such as fossil fuels. Electricity generation and distribution systems made the widespread use of electric motors and electric lights possible. One advantage of electricity as an energy source is that it can be transported easily, but electricity is difficult to store. Cook's estimate of the daily per capita energy consumption for people in the United States circa 1970 was 230,000 kilocalories (about 962 megajoules).

### Culture notes

**megajoule:** The joule (symbol: J) is a derived unit of energy in the International System of Units. The megajoule (MJ) is equal to one million joules. The energy required to heat 10 liters of liquid water at constant pressure from 0°C to 100°C is approximately 4.2 MJ. And one kilowatt hour of electricity is 3.6 MJ.

**the Renaissance:** It was the period in European history, especially Italy, from the 14th century to the 16th century. The period was conventionally characterized by a surge of interest in Classical scholarship and values. To the scholars and thinkers of the day, it was primarily a time of the revival of Classical learning and wisdom after a long period of cultural decline and stagnation.

### Vocabulary

per capita /pə 'kæpɪtə/ *a.* 人 均 的

advanced /əd'vɑːnst/ *a.* 先 进 的 ； 高 级 的

industrial /m'ɪndʌstriəl/ *a.* 工 业 的 ； 产 业 的

evolve /ɪ'vɒlv/ *v.* 逐 步 发 展 ； 逐 渐 演 变

label /'leɪbl/ *v.* 贴 标 签 于 ； 把 ... 称 为

kilocalorie /'kɪlə,kæləri/ *n.* 千 卡

megajoule /'megə,dʒuːl/ *n.* 兆 焦

calorie /'kæləri/ *n.* 卡 路 里

Fahrenheit /'færənhaɪt/ *n.* 华 氏 温 度

illuminate /ɪ'luːmɪneɪt/ *v.* 照 亮 ； 照 明

characterize /'kærɪktəraɪz/ *v.* 描 述 ... 的 特 征 ； 描 绘

domestication /də,mestɪ'keɪʃn/ *n.* 驯 养

cultivate /'kʌltɪveɪt/ *v.* 耕 作 ； 开 垦

impetus /'ɪmpɪtəs/ *n.* 推 动 力 ； 促 进 因 素

crescent /'kreznt/ *n.* 新 月 形

circa /'sɜːkə/ *prep.* 大 约 ； 左 右

the Renaissance /rɪ'neɪsəns; 'renəsəns/ *n.* 文 艺 复 兴

sailing /'seɪlɪŋ/ *n.* 航 行 ； 航 海

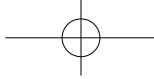
usher in 开 启 ； 开 创

mechanical /mɪ'kæniːkl/ *a.* 机 械 的

hay /heɪ/ *n.* 干 草

bulky /'bʌlki/ *a.* 体 积 大 的 ； 庞 大 的





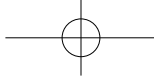
pipeline /'paɪp,lam/ *n.* 管道  
 internal /ɪn'tɜːnl/ *a.* 内部的; 里面的  
 combustion /kəm'bʌstʃn/ *n.* 燃烧  
 internal combustion engine 内燃机

vary /'veəri/ *v.* 彼此相异  
 wagon /'wæɡən/ *n.* 四轮运货车  
 contrast /'kɒntrɑːst/ *n.* 差别; 差异

## Integrated exercises

**1** Match each of the following statements with the paragraph from which the information is derived. You may choose a paragraph more than once.

- \_\_\_\_\_ 1 Coal became the major energy source in industrialized nations during the Industrial period.
- \_\_\_\_\_ 2 According to Cook, food was the first and only source of energy during the Primitive period.
- \_\_\_\_\_ 3 Energy matters a lot to people's quality of life, which can be perceived by reviewing the history of energy consumption.
- \_\_\_\_\_ 4 People were able to use wood to heat and cook thanks to their ability of controlling fire.
- \_\_\_\_\_ 5 The development of internal combustion engines contributes to today's transportation system.
- \_\_\_\_\_ 6 More energy sources were found in wood and coal, wind and water.
- \_\_\_\_\_ 7 E. Cook's table of daily personal energy consumption falls into six different periods of societal development.
- \_\_\_\_\_ 8 The wide use of electric motors and electric lights was made possible by electricity generation and distribution systems.
- \_\_\_\_\_ 9 People's ability to use animals to perform work characterized the Primitive Agricultural period.
- \_\_\_\_\_ 10 Compared with coal, oil served as a better source of energy in terms of personal transportation.



**2** Complete the following table to check your understanding of the major points and structure of the text.

<p>Energy consumption in general (Paras. 1-2)</p>	<ul style="list-style-type: none"> <li>• The history of 1) _____ shows the importance of energy to our quality of life. Societies have been forced to change 2) _____ throughout the history owing to their dependence on energy.</li> <li>• A table of historical energy consumption made by E. Cook illustrates personal energy consumption has increased as society has 3) _____.</li> </ul>
<p>Energy consumption in detail (Paras. 3-8)</p>	<ul style="list-style-type: none"> <li>• In the Primitive period, 4) _____ was the only source of energy consumed by a person.</li> <li>• During the Hunting period, 5) _____ became the first source of energy in a residential setting thanks to people's ability to control fire.</li> <li>• In the Primitive Agricultural period, 6) _____ enabled humans to grow more food than they needed and this became the impetus for the creation of an agricultural industry.</li> <li>• During the Advanced Agricultural period, more energy was consumed because humans learned to use different forms of energy such as coal, wind and water. 7) _____ became a significant component of human energy consumption.</li> <li>• In the Industrial period, the 8) _____ was invented to transform heat energy to mechanical energy. Different types of energy were used in steam engines: wood and hay, coal and oil.</li> <li>• The modern Technological period is associated with the development of internal combustion engines that use 9) _____ and electricity is generated from 10) _____.</li> </ul>

**3** Work in pairs and list the major types of energy consumed in each historical period. Take notes of the energy types while you do this task.

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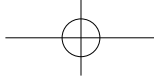
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**4** Translate the phrases into Chinese.

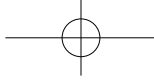
- |                                |                              |
|--------------------------------|------------------------------|
| 1 energy consumption _____     | 6 be equal to _____          |
| 2 the quality of life _____    | 7 degree centigrade _____    |
| 3 put ... in perspective _____ | 8 degree Fahrenheit _____    |
| 4 societal development _____   | 9 source of energy _____     |
| 5 be essential for _____       | 10 residential setting _____ |



- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 11 be characterized by _____      | 20 steam engine _____               |
| 12 domestication of animals _____ | 21 mechanical energy _____          |
| 13 grow crops _____               | 22 industrialized nation _____      |
| 14 cultivate fields _____         | 23 unit mass _____                  |
| 15 electric motor _____           | 24 be associated with _____         |
| 16 electric light _____           | 25 internal combustion engine _____ |
| 17 perform work _____             |                                     |
| 18 sailing ship _____             | 26 primary energy _____             |
| 19 generate heat _____            |                                     |

**5** Complete the sentences by translating the Chinese given in brackets into English. Refer to the phrases listed above when necessary.

- 1 \_\_\_\_\_ (人均能源消耗) in the country is very low.
- 2 Understanding the pattern of positive and negative emotions will help you \_\_\_\_\_ (正确对待情感问题).
- 3 Water \_\_\_\_\_ (对于生物来说是必不可少的).
- 4 That may sound a lot, but it \_\_\_\_\_ (只相当于国民生产总值的 0.6%).
- 5 The city \_\_\_\_\_ (有着钢和玻璃结构的现代高层建筑).
- 6 It has been well documented that the cancer risks \_\_\_\_\_ (与吸烟有关).



## Intensive reading

### ► Warming up

**1** We talk a lot about energy consumption. How is energy consumption distributed globally? What is the major reason for the rapid growth of renewable energy consumption? The following passage may help clarify these questions.

**A**s global energy consumption rises due to both the population and the demand per person for more energy, it presents two features.

The first feature is that the distribution of energy consumption globally is disproportionate. In 2017, China, the US and India were the largest consumers of primary energy globally. On a per capita basis, however, the data looks a bit different. As of 2015, Qatar, Bahrain and Kuwait were among the countries with the highest per capita energy consumption.

The other notable feature is that renewable energy consumption has increased dramatically in recent years and is projected to continue to increase. Renewable energy includes solar energy, wind power, hydroelectric energy, biomass and geothermal power, to name a few. By 2040, it is expected to reach about 2,748 million tonnes of oil equivalent. In comparison, the total renewable energy consumption totaled 35 million tonnes of oil equivalent in 1990.

Recent data suggests that renewable energy is growing as a share of the primary energy consumption worldwide. Among all countries globally, China has installed the most renewable energy capacity as of 2018. The growth of renewable energy has been largely due to reduction in technology costs. However, in order to reach a secure, sustainable and economically feasible energy system, global governments must implement policies to encourage and support renewable energy sources. Investment into renewables and a market design to reliably integrate renewables into modern infrastructure are necessary for successful implementation.

**2** Work in groups and discuss how to reach a secure, sustainable and economically feasible energy system.



## Reading text

# The Culture of Energy: An Introduction

- 1 Energy is a hot issue these days. Primarily, this is because it is at the top of the list of concerns over the climate and the environment, the supply security, the price and economic growth. This is with good reason. Energy is an indispensable element in modern life, and if we look at the period after World War II, energy has increasingly become an essential part of everyday life. It has become one of the raw materials of human life, not the only one, but one of the most important.
- 2 Everyday life is unthinkable without energy. From the electric toothbrush's first oscillating motion to the bedside lamp's last ray of light, our life is based on energy use. Almost every activity we pursue during the day, on our way to work, at work, in the home or related to leisure – the activity presupposes energy use.
- 3 The culture of the modern world involves sizeable and continuous consumption of energy. Like most technology, energy use suspends some of the natural conditions of existence. The alteration between warmth and cold, between light and dark, has been suspended by the introduction of reliable heating and electric lighting in buildings. In most parts of the world, we have a light whenever we desire it, and the buildings maintain a comfortable temperature of 21 degrees Celsius (°C) by use of either heating or air conditioning. The welfare state has significantly sped up this development to a degree that notions such as wellness and individual well-being have become natural elements of our consumer culture.
- 4 The modern understanding of energy emerged with the industrial society. The First Industrial Revolution was indeed revolutionary exactly because mechanical energy replaced animal and human energy in the production of goods. Since the middle of the 19th century, modern energy found its way to other parts of society, to transport, the household, etc. In most – but not all – places, the gas light triumphed as the street light and the old natural oil lamps disappeared because of the brighter and safer light from the new lamps. As time passed, when the product was improved and the price became reasonable, the electric bulb was gradually the preferred choice. The city and the home became enlightened.
- 5 From the very beginning, the exploitation of gas and electricity was separate from the production of energy and from the use of energy in private households



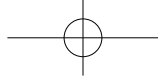
and industry. Production and consumption of energy were slowly but surely separated and, in short, replaced by a structure in which production was located in the public sphere, while consumption remained in the private sphere. The introduction of district heating was somewhat later and a significant step in this process. After that, energy use turned into a question of pushing a button or turning a valve.

- 6 At the same time as energy has grown into a more indispensable element in modern life, to the individual human being, it has lost its materiality. This is a consequence of the centralization of production at power stations, at the combined heat and power stations, and at nuclear power plants. Subsequently, the word “energy” has become a symbol of the fact that we no longer have a direct connection to the value of fuels, but only to energy using instruments or appliances in manufacturing facilities, in households and on highways as well.
- 7 The disappearance of the present materiality of the fuels (wood, coke, coal, etc.) in favor of the absent materiality of energy, firmly indicates that a scientifically-based conception of the universe of energy requires more than an understanding of the technology-based improvement of everyday life and the technical and the economic sciences’ quests for optimizing energy efficiency in production and consumption. We also need to address and explore the cultural contexts in which the daily turnings on and off of power and heat take place, if we want to reach a complex understanding of energy’s role in modern societies. In other words, an understanding which not only focuses on the technological, political or economic aspects, but combines those perspectives with a thorough historical analysis of cultural contexts.

### Culture notes

**welfare state:** It refers to the concept of government in which the state or a well-established network of social institutions plays a key role in the protection and promotion of the economic and social well-being of citizens. It is based on the principles of equality of opportunity, equitable distribution of wealth, and public responsibility for those unable to avail themselves of the minimal provisions for a good life.

**the First Industrial Revolution:** It is the process of change from an agrarian and handicraft economy to one dominated by industry and machine manufacturing. This process began in Britain in the 18th century and from there spread to other parts of the world.



## Vocabulary

indispensable /ˌɪndɪ'spensəbl/ *a.* 必需的; 不可或缺的

unthinkable /ʌn'θɪŋkəbl/ *a.* 难以想象的

oscillate /'ɒsɪlət/ *v.* 振荡; 摆动

pursue /pə'sjuː/ *v.* 从事; 追求

leisure /'leɪzə/ *n.* 消遣; 娱乐

presuppose /ˌpri:sə'pəʊz/ *v.* 以...为前提; 预先假定

sizeable /'saɪzəbl/ *a.* 相当大的

continuous /kən'tɪnjʊəs/ *a.* 持续的; 不间断的

suspend /sə'spend/ *v.* 暂停; 中止; 延缓

alteration /ˌɔːltə'reɪʃn/ *n.* 变化; 变动

Celsius /'selsiəs/ *n.* 摄氏温度

air conditioning *n.* 空调系统

significantly /sɪɡ'nɪfɪkəntli/ *ad.* 显著地

notion /'nəʊʃn/ *n.* 概念

wellness /'welnəs/ *n.* 健康

well-being /ˌwel'biːɪŋ/ *n.* 健康; 幸福

revolutionary /ˌrevə'ljuːʃn(ə)ri/ *a.* 革命性的; 突破性的

triumph /'traɪʌmf/ *v.* 战胜; 获胜

enlighten /ɪn'laɪtn/ *v.* 照耀; 照亮

exploitation /ˌekspləɪ'teɪʃn/ *n.* 开发; 利用

structure /'strʌktʃə/ *n.* 结构; 构造; 体系

sphere /sfɪə/ *n.* 领域; 范围

somewhat /'sʌmwɒt/ *ad.* 有点; 稍微

valve /vælv/ *n.* 阀

materiality /mə'tɪəri'æləti/ *n.* 物质性; 实体性

centralization /ˌsentrəlaɪ'zeɪʃn/ *n.* 集中

subsequently /sʌbsɪkwəntli/ *ad.* 随后

disappearance /ˌdɪsə'piərəns/ *n.* 消失

conception /kən'sepʃn/ *n.* 概念; 观念; 想法

quest /kwɛst/ *n.* 追求; 探索

context /'kɒntekst/ *n.* 环境; 背景

## Text understanding

1 Read Para. 1 and answer the following questions.

1 Why is energy a hot issue today?

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2 In what sense is energy an indispensable element in modern life?

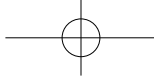
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3 What logic pattern does this paragraph employ?

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**2** Read Paras. 2-3 and find the examples illustrating the importance of energy use in modern life.

1 Energy use in daily life

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2 Energy use in the natural conditions of existence

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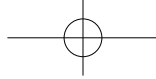


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**3** Complete the following table to check your understanding of the major points and structure of the text.

Introduction (Para. 1)	<p><b>The importance of energy:</b></p> <ul style="list-style-type: none"> <li>• Energy has increasingly become a(n) 1) _____ part of everyday life.</li> <li>• Energy has become one of the 2) _____ of human life.</li> </ul>
Body (Paras. 2-6)	<p><b>Energy use in modern society:</b></p> <ul style="list-style-type: none"> <li>• Everyday life is 3) _____ without energy.</li> <li>• The culture of the modern world relies heavily on 4) _____.</li> </ul> <p><b>The historical progress of energy use:</b></p> <ul style="list-style-type: none"> <li>• The modern understanding of energy emerged with the 5) _____ when animal and human energy were replaced by 6) _____.</li> <li>• Modern energy found its way to other parts of society since 7) _____.</li> <li>• Production and consumption of energy were separated with production located in the 8) _____ and consumption in the 9) _____.</li> <li>• Energy has lost its 10) _____ as a result of the 11) _____ of production at power stations.</li> </ul>
Conclusion (Para. 7)	<p>Disappearance of materiality of energy calls for a complex understanding of the conception of energy, with a combined focus on the technological, political or economic aspects, along with 12) _____.</p>





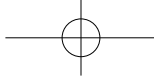
## Language building

**1** Match each of the words in the left column with its corresponding meaning in the right column.

_____	1 alteration	a the full and effective use of sth.
_____	2 address	b to obtain victory
_____	3 subsequently	c to depend on sth. that is believed to exist or to be true
_____	4 exploitation	d the act or process of changing sth.
_____	5 unthinkable	e to give attention to or deal with a matter
_____	6 presuppose	f impossible to imagine
_____	7 wellness	g to move or swing from side to side regularly
_____	8 sizeable	h the state of being healthy
_____	9 oscillate	i fairly large
_____	10 triumph	j after sth. else happened

**2** Among the three choices given, choose the one that is **NOT** close in meaning to the underlined word in each sentence.

- 1 Energy is an indispensable element in modern life.  
A) necessary                      B) essential                      C) optional
- 2 This is a consequence of the centralization of production at power stations, at the combined heat and power stations, and at nuclear power plants.  
A) source                      B) outcome                      C) result
- 3 Like most technology, energy use suspends some of the natural conditions of existence.  
A) delays                      B) stops                      C) promotes
- 4 Almost every activity we pursue during the day presupposes energy use.  
A) engage in                      B) guide                      C) carry out
- 5 The buildings maintain a comfortable temperature of 21 degrees Celsius by use of either heating or air conditioning.  
A) keep                      B) abandon                      C) preserve
- 6 As time passed, when the product was improved and the price became reasonable, the electric bulb was gradually the preferred choice.  
A) favorite                      B) preferable                      C) ensured
- 7 The introduction of district heating was somewhat later and a significant step in this process.  
A) brilliant                      B) important                      C) great
- 8 Energy has increasingly become an essential part of everyday life.  
A) gradually                      B) progressively                      C) suddenly



9 Production and consumption of energy were replaced by a structure in which production was located in the public sphere, while consumption remained in the private sphere.

- A) area                      B) globe                      C) field

10 In other words, an understanding which not only focuses on the technological, political or economic aspects, but combines those perspectives with a thorough historical analysis of cultural contexts.

- A) concentrates on      B) looks upon              C) emphasizes

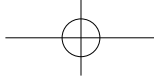
**3** Complete each of the following sentences with an appropriate word from the given word family. Change the form where necessary.

- 1 The company makes a very \_\_\_\_\_ product. (rely, reliance, reliable)
- 2 The drug causes \_\_\_\_\_ of mood in some people. (oscillate, oscillation, oscillator)
- 3 Among the various social media policies adopted by businesses, one has risen to the top for its \_\_\_\_\_ view that social media use is an opportunity rather than a threat. (enlighten, enlightenment, enlightened)
- 4 On holidays, we can see a \_\_\_\_\_ line of cars on highways. (continue, continual, continuous, continuing)
- 5 Japanese industry is making \_\_\_\_\_ use of robots. (increase, increased, increasing, increasingly)
- 6 It is believed that education levels are strongly \_\_\_\_\_ to income. (relating, relation, related)
- 7 Her duties are \_\_\_\_\_ to keep the patients comfortable. (prime, primary, primarily)
- 8 If we cannot sell more goods, we'll have to cut back on the \_\_\_\_\_.  
(produce, product, production, producer)
- 9 These days, people are using a growing array of \_\_\_\_\_ communication methods – e-mail, instant messaging and social networking sites. (electric, electronic, electricity, electrified)
- 10 Some companies have suspended new oil drilling and \_\_\_\_\_ projects.  
(explore, exploration, explorer)

**4** Match each word in the box with the group of phrases where it is usually found.

maintain	issue	suspend	well-being	context	significant
----------	-------	---------	------------	---------	-------------

- |  |  |
|--|--|
| <p>1 _____</p> <p>cultural ~</p> <p>historical ~</p> <p>in the ~ of</p> <p>put sth. in ~</p> | <p>2 _____</p> <p>a sense of ~</p> <p>mental ~</p> <p>physical ~</p> <p>economic ~</p> |
|--|--|



3 \_\_\_\_\_  
 ~ the rescue work  
 ~ negotiations with  
 ~ talks  
 ~ a project

4 \_\_\_\_\_  
 a hot ~  
 racial ~s  
 gender ~s  
 a key ~

5 \_\_\_\_\_  
 ~ a comfortable temperature  
 ~ a good relationship  
 ~ order  
 ~ contact with

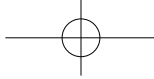
6 \_\_\_\_\_  
 a(n) ~ step  
 ~ development  
 a(n) ~ impact  
 a(n) ~ difference

**5** Find the idiomatic expressions in the text matching the Chinese equivalents.

- |                 |                    |
|-----------------|--------------------|
| 1 热门话题 _____    | 12 必不可少的元素 _____   |
| 2 经济增长 _____    | 13 发电站 _____       |
| 3 电动牙刷 _____    | 14 核电厂 _____       |
| 4 床头灯 _____     | 15 丧失物质性 _____     |
| 5 以...为基础 _____ | 16 位于 _____        |
| 6 明暗交替 _____    | 17 优化能效 _____      |
| 7 电力照明 _____    | 18 文化背景 _____      |
| 8 21 摄氏度 _____  | 19 换言之 _____       |
| 9 自然生存条件 _____  | 20 关注 _____        |
| 10 加速 _____     | 21 与...有直接关系 _____ |
| 11 个人幸福 _____   | 22 历史性分析 _____     |

**6** Combine the sentences given below. Then compare your sentences with the original ones in the text.

- 1 \_\_\_\_\_  
 \_\_\_\_\_
- a In most parts of the world, we have a light whenever we desire it.  
 b The buildings maintain a comfortable temperature of 21 degrees Celsius by use of either heating or air conditioning.
- 2 \_\_\_\_\_  
 \_\_\_\_\_
- a The welfare state has significantly sped up this development to a degree.  
 b The degree is that notions such as wellness and individual well-being have become natural elements of our consumer culture.



3

- 
- 
- a The word “energy” has become a symbol of a fact.
  - b The fact is that we no longer have a direct connection to the value of fuels, but only to energy using instruments or appliances in manufacturing facilities, in households and on highways as well.

4

- 
- 
- a We also need to address and explore the cultural contexts.
  - b In the cultural contexts, the daily turnings on and off of power and heat take place, if we want to reach a complex understanding of energy’s role in modern societies.

5

- 
- 
- a In other words, an understanding which focuses on the technological, political or economic aspects.
  - b The understanding combines those perspectives with a thorough historical analysis of cultural contexts as well.

**7** Translate each of the Chinese sentences into English by using the underlined phrase or structure in the example.

- 1 Since the middle of the 19th century, modern energy found its way to other parts of society.

他所发明的产品中只有一款进入市场销售。

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- 2 From the electric toothbrush’s first oscillating motion to the bedside lamp’s last ray of light, our life is based on energy use.

那部电视剧中的故事是基于现实生活的。

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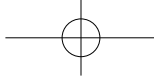
- 3 The disappearance of the present materiality of the fuels (wood, coke, coal, etc.) in favor of the absent materiality of energy, firmly indicates that a scientifically-based conception of the universe of energy requires more than an understanding of the technology-based improvement of everyday life.

建造隧道的计划遭到否决，取而代之的是要架起一座桥梁。

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- 4 In other words, an understanding which not only focuses on the technological, political or economic aspects, but combines those perspectives with a thorough historical analysis of cultural contexts.

这篇课文着重讲述能源发展的历史。

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- 5 From the very beginning, the exploitation of gas and electricity was separate from the production of energy and from the use of energy in private households and industry.

孩子们从一开始就应该养成良好的习惯。

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# Academic writing

## Micro-skill: Definitions

Definitions are the explanation of an unfamiliar phrase, or a term used in a context, so as to make it clear to the reader.

### 1 Simple definitions

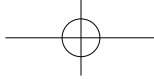
A simple definition is usually made up of the term being defined, the category it belongs to and its application.

Term	Category	Application
Electricity	is a basic part of nature	that is widely used as a form of energy.
A driver's license	is an official document	permitting a specific individual to operate one or more types of motorized vehicles, such as a motorcycle, car, truck or bus on a public road.
A photovoltaic module	is a packaged, connected assembly of solar panels	for the generation of electricity.

1 Complete the following definitions by choosing a suitable category word from the box.

vent city material works organs instrument behavior molecule

- 1 A microscope is a(n) \_\_\_\_\_ used to see objects that are too small to be seen by the naked eye.
- 2 The lungs are the primary \_\_\_\_\_ of the respiratory system in humans and many other animals including a few fish and some snails.
- 3 A metropolis is a large \_\_\_\_\_, functioning as a significant economic, political and cultural center for a country or region, and an important hub for regional or international connections, commerce and communications.
- 4 Plastic is a(n) \_\_\_\_\_ consisting of any of a wide range of synthetic or semi-synthetic organic compounds that can be molded into solid objects.
- 5 Bullying is a pattern of anti-social \_\_\_\_\_ found in many schools.



- 6 A volcano is a(n) \_\_\_\_\_ in the crust of a planetary-mass object, such as the earth, that allows hot lava, volcanic ash and gases to escape from a magma chamber below the surface.
- 7 Literature refers to \_\_\_\_\_ or any single writing of artistic or intellectual value to be enjoyed by readers.
- 8 DNA is a(n) \_\_\_\_\_ used in the growth, development, functioning and reproduction of all known living organisms and many viruses.

**2** Write definitions for the following terms.

- 1 Peking opera is \_\_\_\_\_  
\_\_\_\_\_
- 2 Kidneys are \_\_\_\_\_  
\_\_\_\_\_
- 3 Recycling is \_\_\_\_\_  
\_\_\_\_\_
- 4 A metaphor is \_\_\_\_\_  
\_\_\_\_\_

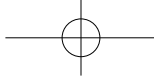
**2** Complex definitions

A complex definition may explain or illustrate a term by

- a) quoting a definition from another writer;
- b) giving a variety of relevant situations;
- c) explaining a process;
- d) using a category word.

**3** Read the following sentences and underline the term being defined. Then choose from a) to d) above to match each of the definitions.

- \_\_\_\_\_ 1 Fiction broadly refers to any narrative that is derived from the imagination – in other words, not based strictly on history or facts.
- \_\_\_\_\_ 2 An urban heat island (UHI) is an urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities with the temperature difference larger at night than during the day, especially when winds are weak.
- \_\_\_\_\_ 3 The Philippine poet Denn A. Meneses defines home as a magical place that “stays at the core of our being no matter where our life’s journeys take us”.



- \_\_\_\_\_ 4 A community can be a city or town where people live with friends, neighbors, or in a church group, or a farm away from the distractions of the city, with like-minded people all willing to share their resources.
- \_\_\_\_\_ 5 Are you afraid of high places or water? If so, you suffer from one of the most common phobias, which are strong, persistent, but unreasonable fears.
- \_\_\_\_\_ 6 Acid rain is the result of tremendous quantities of fossil fuels such as coal and oil discharged annually into the atmosphere. Through a series of complex chemical reactions, these pollutants can be converted into acids, which may return to earth as components of either rain or snow.

### 3 Use of definitions

A definition can be used when a term in a title, even if it is quite common, needs to be defined to demonstrate the writer's understanding of its meaning. For example:

Should Universities Offer More Distance Learning Programs?

Distance learning programs are the online courses that students can attend to earn degrees and diplomas.

**4** Read the following titles, underline the terms that may need defining and write definitions for them.

1 Is body language important to one's success in social contact?

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2 Should the flow of immigrants be responsible for the crime and terrorism in Europe?

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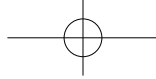
3 Will e-books replace printed books in the next 20 years?

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## Macro-skill: Introductory paragraph

### 1 Overview of academic writing

Academic writing, by definition, is writing for academic purposes. While a little bit too “bookish” in the eyes of some people because they often assume that it only involves research, the word “academic” has a much broader meaning, just generally related to any academy or school, especially of higher learning. In other words, the learning activities of university students are mostly “academic”, as opposed to “vocational” or “everyday”.

As a kind of essay writing, which may involve narration, description, exposition and argumentation, academic writing focuses on the latter two genres and differs from vocational, everyday or literary writing in that it has its specific features in terms of essay organization / structure as well as lexical conventions and sentence patterns. For example, the first-person statement like “I think” should be avoided. A typical academic essay usually consists of three parts, i.e., introduction, main body and conclusion, though some may refer to the three parts as “beginning”, “development” and “ending”, which is more closely related to literary writing.

The introductory part often raises the question / issue / topic for discussion / development / analysis / debate to attract the attention of the reader. The main body of an essay develops / analyzes the issue or illustrates the idea raised in the introductory part in a certain logic, like problem-solution, classification, cause-effect or comparison and contrast. The concluding part of an essay sums up the analysis made in the main body by clarifying or stressing the view / comments / idea in a definite and forceful way to make a strong impression on the reader’s mind.

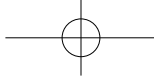
### 2 How to write the introductory paragraph?

You can begin an essay in different ways to fit for the topic of discussion. Four ways of beginning an essay are given here for your reference.

- 1) Raising a question
- 2) Using the “but” pattern to introduce the writer’s idea or topic for discussion
- 3) Presenting a fact / phenomenon or providing the background information
- 4) Quoting an idea or a saying

#### **1** Read the following introductory paragraph and answer the question.

The English language is spoken or read by a large number of people in the world, for historical, political and economic reasons; but it may also be true that it owes something of its wide appeal to qualities and characteristics inherent in itself.



What are these characteristic features (which outstand in making the English language what it is), which give it its individuality and make it of this worldwide significance?

Question raised for discussion:

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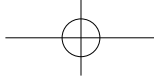
**2** Read the following introductory paragraph and complete the table.

In 2016 the video gaming industry racked up sales of about \$100 billion, making it one of the world's largest entertainment industries. The games range from time-wasting smartphone apps to immersive fantasy worlds in which players can get lost for days or weeks. Indeed, the engrossing nature of games is itself cause for concern. Last year four economists published a paper suggesting that high-quality video games – an example of what they call “leisure luxuries” – are contributing to a decline in work among young people, and especially young men. Given the social and economic importance of early adulthood, such a trend could spell big trouble. But are video games causing the young to drop out?

Topic introduced	<p>In 2016 the video gaming industry became</p> <p>1) _____.</p> <p>The games are 2) _____ and make players</p> <p>3) _____.</p> <p>The engrossing nature of games is 4) _____.</p> <p>The idea of four economists is that</p> <p>5) _____.</p>
Topic for discussion	6) _____ ?

**3** Read the following introductory paragraph and complete the table.

It seems likely that Teotihuacán's natural resources – along with the city elite's ability to recognize their potential – gave the city a competitive edge over its neighbors. The valley, like many other places in Mexican and Guatemalan highlands, was rich in obsidian (黑曜石). The hard volcanic stone was a resource that had been in great demand for many years, at least since the rise of the Olmecs (a people who flourished between 1200 BC and 400 BC), and it apparently had a secure market. Moreover, recent research on obsidian tools found at Olmecs sites has shown that some of the obsidian obtained by the Olmecs originated near Teotihuacán. Teotihuacán obsidian must have been recognized as a valuable commodity for many centuries before the great city arose.



Topic for discussion	Teotihuacán's competitive edge
Topic to be developed	Teotihuacán's natural resources gave the city 1) _____.
Facts provided	The valley was 2) _____. Obsidian 3) _____ for many years, and 4) _____ for many centuries.

**4** Read the following introductory paragraph and complete the table.

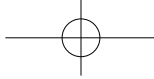
Hegel, the German philosopher, says, "We learn from history that men never learn anything from history." This wry remark has been confirmed time and again by historical events, one of which is Hitler's invasion of the Soviet Union. He must have clean forgotten or willfully ignored the great disaster Napoleon brought upon himself by attacking Russia in the 19th century.

Topic for discussion	Hitler's invasion of the Soviet Union
Quotation	1) _____ _____.
Idea to convey	Hitler's failure in his invasion of the Soviet Union is similar to 2) _____ _____.

**Writing assignment**

Write an introductory paragraph on the following topics. Each paragraph should be around 50 words in an academic or written style.

- 1 Energy is indispensable in modern society.
- 2 Energy is the engine of civilization.



# Sharing

Tell the story of how your family uses energy and report the changes in energy use through three generations of your family.

**1** Conduct an interview with your parents and grandparents. Ask them the following questions:

- 1) What types of energy did your family use when you were young?
- 2) How did you use them?
- 3) What was your life like at that time?

**2** Work in groups and summarize the information from your interview and prepare a group oral presentation with PPT including the three parts:

- 1) “My family” (basic information about your family)
- 2) “Energy story of my family” (energy types used by and the life conditions of your grandparents, your parents and yourself)
- 3) Conclusion (how energy has changed people’s life)

**3** Give your presentation in class.