能源英语阅读

NENGYUAN YINGYU YUEDU

高　然◆编著

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内容简介

本书共分为 8 个板块：能源基础、化石燃料、可再生能源、能源种类、能源概念、能源区域与国别、能源与环境、中国能源。每个板块包含若干篇阅读文章及阅读理解题目。文章涉及主题广，阅读难度适中，题型丰富，在提高学生阅读能力的同时扩展学生的能源视野。

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Energy English Reading

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Contents

Section 1 Basics

Text 1 Classification of Energy Sources

Energy sources can be classified in various aspects—origin, method of obtainment, usability, long-term availability, property, commercial application and pollution to environment. The contents of the classification are overlapped to some extent.

1. Based on origin

1) Fossil fuels energy (from coal, oil and natural gas)

2) Nuclear energy

3) Hydro energy

4) Solar energy

5) Wind energy

6) Biomass energy

7) Geothermal energy

8) Ocean energy (from thermal, tide and wave, etc.)

9) Hydrogen energy

2. Based on method of obtainment

1) Primary Energy Sources (PESs)

Primary energy is an energy form embodied in nature and still not being subjected to any conversion or transformation process. Primary energy sources can be non-renewable or renewable. These energy sources include coal, crude oil, natural gas, solar energy, wind energy, hydro energy, biomass energy, nuclear fuels, etc. These sources are generally in raw forms and generally cannot be used directly. They need processing and conversion to meet the requirement of the users in a usable form.

2) Secondary Energy Sources

Secondary energy sources are obtained from primary energy sources and become available to a consumer after processing or transformation. They are high-qualified and easily used. Thus, they are also known as usable energy sources. Secondary energy sources include electricity, steam, hot water, coke, coal gas, hydrogen energy etc.

3. Based on usability

This kind of classification is based on technological maturity of an energy source.

1) Conventional energy sources

Conventional energy sources are traditionally utilized, technically matured, and are widely used in large-scale production, including fossil fuels, hydro energy and

nuclear energy.

2) Non-conventional energy sources

Non-conventional energy sources are less developed than conventional energy sources or still in research. They are also known as new energy sources or alternative energy sources, including solar energy, wind energy, biomass energy, geothermal energy, ocean energy and hydrogen energy.

4. Based on long-term availability

1) Renewable energy sources

The supply of renewable energy sources is not reduced by human's consumption and renewed by nature. They are hydro energy, solar energy, wind energy, biomass energy, geothermal energy and ocean energy.

2) Non-renewable energy sources

Non-renewable energy sources are finite and their formation requires millions of years, which means they can not get supplement after being consumed and confront the risk of depletion. They are fossil fuels and uranium.

5. Based on properties

1) Energy containing sources

This form of energy sources are materials providing energy. They can be stored and transported directly, such as fossil fuels, wood, nuclear fuels, hydrogen, etc.

2) Process energy sources

They provide energy in the process of physical movement of materials, such as electricity, hydro energy, wind energy, tidal energy, wave energy, direct solar

radiation, etc.

6. Based on commercial application

1) Commercial energy sources

The secondary usable energy sources are classified as commercial energy sources because they are essentially harnessed in commercial activities. Electricity, petrol, diesel, natural gas, etc. belong to this category.

2) Non-commercial energy sources

Non-commercial energy sources are those collected by individuals in nature and directly used without commercial operation. Wood, animal dung cake, crop residue, etc. are categorized as non-commercial and are typically used in rural areas.

7. Based on pollution to environment

1) Clean energy sources

Clean energy sources are less or not contaminative to the environment. Solar energy, hydro energy, ocean energy, hydrogen energy, etc. belong to this form of energy sources.

2) Non-clean energy sources

Energy sources which are contaminative to the nature are known as non-clean energy sources. Coal and oil are the representatives of this form.

I. Terms

1. 新能源_____ 4. 常规能源_____

2. 清洁能源_____ 5. 可再生能源_____

3. 替代能源_____

II. Short Answer

6. What are differences between primary energy and secondary energy?

Text 2 Energy Demand

A Events in energy industry, coupled with emerging and long-standing socio-economic trends, have changed many aspects of the energy demand outlook, but have not altered the overall view of a world whose appetite for energy continues to grow through to 2040. Global primary energy demand increases by nearly one-third between 2013 and 2040 to reach 17,900 Mtoe. The annual average rate of growth in primary energy demand slows over time: from 2.5% in 2000-2010, it falls to 1.4% in the current decade, 1% in the next and below 1% in the 2030s. A deceleration of global economic and population growth, coupled with more robust energy efficiency and other policies all play a role, particularly the slowing of economic expansion in some key economies (such as China).

B The link between economic growth and energy demand weakens over time in the New Policies Scenario, reflecting the changing nature of economic development. More markets approach a saturation point in demand for energy services and more energy efficient technologies are adopted, together with policies that allow these services to be provided more effectively. Many economies also continue to undergo structural change, either in the form of a transition towards less energy-intensive forms of economic activity (i.e. services and light industry), such as in China, or industrialisation, such as in India.

C In the case of China, energy consumption has grown at a pace close to that of economic growth in recent decades, but there is an increasing divergence over the period to 2040. India traces a similar but less energy-intensive industrial path, relative to its overall economy. At their very different stage of economic development, the United States and the European Union have already experienced significant deindustrialisation, with services playing a much greater role in economic growth and energy efficiency policies being implemented across all sectors. The US economy continues to grow, but primary energy demand remains relatively stable in absolute terms, while, in the European Union, energy demand falls while the economy continues to expand.

D Primary energy demand for all fuels grows through to 2040. Of this growth, renewables collectively account for 34%, natural gas for 31%, nuclear for 13%, oil for 12% and coal for 10%. Non-hydro renewables and natural gas see growth accelerate after 2025, while demand growth for oil slows notably over time and for coal it stays relatively low through to 2040. By 2040, oil and coal collectively relinquish a 9% share of the global energy mix, while renewables see their share grow (by 5%), as does natural gas (+2%) and nuclear (+2%).

E Regional energy trends (and within regions) are already widely diverse and they continue to be so through to 2040. The shift in the weight of world energy demand towards Asia and, more broadly, to emerging economies, masks strong demand growth in some markets and demand reductions in others. Fossil fuels are powering progress in some countries, while others are reducing this reliance. Renewables

have a bright future in most markets, but some rely on wood and charcoal, while others use solar panels and wind turbines. Some have discarded the nuclear option, while others pursue a nuclear policy or, at least, keep their options open. Per-capita energy use also differs hugely, with, for example, each person consuming more than ten barrels of oil per year in some parts of the world (on average) and ten people consuming less than one barrel in some others.

F Non-OECD (Organization for Economic Cooperation and Development) markets drive all of the growth in world primary energy demand from 2013 to 2040, their consumption ending 55% higher; but average per-capita levels in non-OECD countries are still only around 45% of the OECD average at that time. Aggregate OECD energy demand peaks by 2020 at levels little higher than today, before falling and ending 3% lower than today. By 2040, the share of world energy demand accounted for by the OECD has shrunk to 30% (having been 54% in 2000), the United States drops to 12%, OECD Europe to below 9%, Japan to 2%; collectively, they are broadly on a par with China (22%). Looked at by fuel, non-OECD demand has overtaken that of the OECD for coal (1990), hydropower (early-2000s), natural gas (2008) and oil (2012) and is projected to do so in solar PV (mid-2020s) and wind (late-2030s). The OECD's share of global demand for coal drops to just 14% in 2040, for oil it drops from just under half to around one-third and for natural gas it drops from 47% to around 35%.

G Among the end-use sectors, energy demand grows most quickly in industry, increasing by more than 40% to exceed 4,900 Mtoe in 2040. At the global level, there is rising industrial demand for all forms of energy, but electricity and natural

gas grow strongly while coal use grows only a little. The huge expansion of infrastructure and economic growth that is expected to occur in many developing countries is the source of much of this industrial energy demand. Approaching half of the global growth occurs in just two countries (India, followed by China) and Asia overall accounts for 60% of the total. Within the OECD, the United States and Canada see relatively modest increases in industrial energy demand, while Japan, Europe and Korea see a decline. China's industrial energy demand continues to dwarf all others, but its economic transformation sees industrial demand growth slow to stop by the mid-2030s. There is also an important shift in fuel use in China's industrial sectors, with coal consumption declining by more than 35% (360 Mtoe), and natural gas and electricity increasing to fill the gap. In contrast, India's industrial energy demand is on a steep upward trajectory and by 2040 it is close to overtaking China as the world's largest consumer of coal in industry. The Middle East and China lead the growth in natural gas use in industry, while the United States sees some increase in the near term on the back of relatively low prices. Globally, oil demand in the petrochemicals sector grows by 5.7 mb/d to 2040.

I. List of Headings

Choose the correct heading for each paragraph from the list of headings below.

i. Regional disparity
ii. Changed nature of economic growth
iii. Sectoral trends
iv. Cases of economy-energy relations
v. Regional classification and comparison
vi. An overall outlook
vii. Outlook by fuel

1. Paragraph A

2. Paragraph B

3. Paragraph C

4. Paragraph D

5. Paragraph E

6. Paragraph F

7. Paragraph G

II. Information Contained

Which paragraph contains the following information?

8. Per-capita energy demand features large disparity across regions.

9. In the global energy mix, oil and coal reduce their share while renewables increase their share.

10. The general trend is that energy demand continues to grow through to 2040.

11. By 2012 fossil fuel demand of non-OECD has exceeded that of OECD.

12. The US has implemented energy efficiency policies across all sectors.

13. Industrial energy demand in China is projected to peak by the mid-2030s.

14. Structural changes take place in some countries such as transitions of economic activity forms, industrialisation and so on.

Text 3 Energy Supply

1 The world's energy resources are plentiful and capable of meeting energy demand far beyond 2040; but many are also dispersed unevenly and they are not

all inexhaustible. To bring forth these resources at the scale that is required will demand huge and timely investments and effective execution across global supply chains. Such activities have to be conducted against a backdrop of complexity and uncertainty, as they are buffeted by the prevailing geopolitical winds, the changeable economic outlook, the investment climate and the rapidly evolving technological landscape. While the assessed abundance of energy resources seldom changes dramatically from one year to the next, the circumstances surrounding their successful exploitation never stand still.

2 Estimated global remaining technically recoverable oil resources stand at around 6,100 billion barrels (as of end of 2014). Of these resources, around 2,800 billion barrels are conventional oil (crude oil and Natural Gas Liquids, NGLs), 1,900 billion barrels are extra-heavy oil and bitumen, 1,100 billion barrels are kerogen oil and 350 billion barrels are tight oil. Proven oil reserves stand at 1,700 billion barrels, equivalent to 52 years of current production. All else being equal, the drop in oil prices should result in some proven reserves being re-categorised as "contingent", but such a revision takes time to filter through to published estimates.

3 As of end of 2013, the world's proven reserves of coal are estimated to have stood at 970 billion tonnes, equivalent to 122 years of production at current rates. Of total proven reserves, around 70% are steam and coking coal and the remainder lignite. Over one-quarter of global coal reserves are located in non-OECD Asia, the main demand centre, with China being the largest single holder in the region (13% of the world total), followed by India (9%) and Indonesia. Significant reserves exist

also in the United States (26%), Russia (17%), Australia (11%) and Europe (8%). Total remaining recoverable resources of coal are more than twenty-times the size of proven reserves, making coal by far the most abundant of the fossil fuels. Both coal reserves and resources are distributed relatively widely.

4 Remaining recoverable natural gas resources are estimated to be 780 trillion cubic metres (tcm), a downward revision resulting from lower estimates of remaining conventional recoverable resources in the Middle East, OECD Europe and Russia. The world's unconventional natural gas resources remain relatively poorly understood and so are subject to future revisions. In addition, at the prices now prevailing, there may be delays in reserves being "proved-up". As of end-2014, proven reserves of natural gas (conventional and unconventional) are estimated to have been 216 tcm, enough to sustain current production levels for 61 years. The largest holders of proven reserves are Russia, Iran and Qatar.

5 The world's renewable energy resources (including bioenergy, hydro, geothermal, wind, solar and marine) are vast and, if all harnessed, could meet projected energy demand many times over. These resources are also very well spread geographically. In a number of cases, the cost of exploiting them is currently prohibitive, but the share of resources that are economically viable is expected to increase as costs decline, in some cases quickly.

6 Identified uranium resources are more than sufficient to meet the world's needs through to 2040. They are estimated to be sufficient to meet global requirements for over 120 years, at 2012 rates of consumption.