

6 Non-renewable energy – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
renewable resource	可再生资源	_____
non-renewable resource	不可再生资源	_____
Fossil fuels	化石燃料	_____
Nuclear power	核能	_____
fission	裂变	_____

Recall

You already use energy from many sources:

- Coal, oil, and natural gas are burned for electricity and transport.
- Nuclear power stations make electricity without burning fuel.
- Some energy sources will eventually run out.

This sheet lines up the non-renewable energy sources. Each idea has a short worked example.

New ideas

■ 1 Renewable and non-renewable

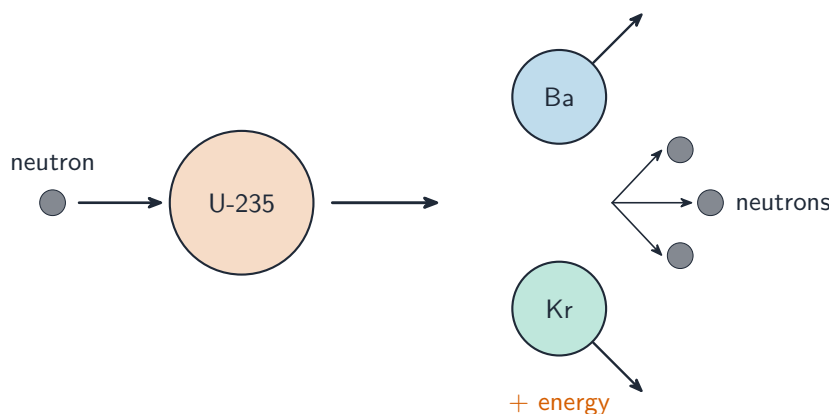
A **renewable resource** 可再生资源 replenishes on a human timescale (sun, wind, water). A **non-renewable resource** 不可再生资源 exists in fixed amounts that take millions of years to form (fossil fuels, nuclear fuel).

■ 2 Fossil fuels

Fossil fuels 化石燃料 (coal, oil, gas) are energy-dense and reliable, but they are non-renewable and release **carbon dioxide** and other pollutants when burned.

■ 3 Nuclear power

Nuclear power 核能 splits uranium (**fission** 裂变) to make heat and then electricity. It produces **no CO₂**, but leaves long-lived radioactive **waste**.



■ 4 The half-life of waste

Radioactive waste decays by its **half-life** – the time for half of it to decay.

Worked example. If an isotope has a half-life of 30 years and you start with 100 g, after 30 years 50 g remains, after 60 years 25 g, and after 90 years just 12.5 g.

Watch out: nuclear power makes no CO₂, but its waste stays dangerous for a very long time (many half-lives), so it must be stored safely for centuries.

Practice

Try these in order. The methods are all above.

2.1 State the difference between a renewable and a non-renewable resource. [2]

2.2 State one advantage and one disadvantage of fossil fuels. [2]

2.3 State one advantage and one disadvantage of nuclear power. [2]

2.4 An isotope has a half-life of 10 years. Starting with 80 g, how much remains after 30 years? [3]

2.5 Explain why nuclear waste must be stored safely for a very long time. [2]