

Exercise walk-through

Fossil Fuels ■ 6.5

eXercise

You must be able to

- describe how **fossil fuels** 化石燃料 form and are used
- explain their environmental impacts (CO₂, pollution, extraction)
- state advantages and disadvantages

Method — Formation and use

Fossil fuels (coal, oil, natural gas) formed from ancient organisms buried and compressed over millions of years. They are burned to release energy — the world's main energy source.

Method — Advantages

- **High energy density** (a lot of energy per unit).
- **Cheap** and reliable with existing infrastructure.

Method — Disadvantages

- Burning releases **CO₂** (climate change) and pollutants (SO₂, particulates → acid rain, smog).
- **Extraction** damages land and water (mining, oil spills, fracking).
- **Nonrenewable** — will run out.

Method — A worked judgement

Coal is cheap and energy-dense but produces the most CO₂ and air pollution of the fossil fuels, so it has the greatest climate impact.

Practice 2.1 ■ 1 mark

How do fossil fuels form?

Solution 2.1

Worked steps

From ancient organisms buried and compressed over millions of years **B1**.

Practice 2.2 ■ 1 mark

State one advantage of fossil fuels.

Solution 2.2

Worked steps

Any one: high energy density, cheap, reliable, existing infrastructure **B1**.

Practice 2.3 ■ 1 mark

State one environmental disadvantage.

Solution 2.3

Worked steps

Any one: CO₂/climate change, air pollution, extraction damage **B1**.

Exam-style 3.1 ■ 1 mark

Burning fossil fuels contributes to climate change mainly by releasing

- A** oxygen
- B** carbon dioxide
- C** water only
- D** nitrogen gas

Solution 3.1

A oxygen

B carbon dioxide



C water only

D nitrogen gas

Worked steps

B — carbon dioxide.

Exam-style 3.2 ■ 2 marks

A country generates most of its electricity from coal.

- (a) State two environmental impacts.
- (b) Explain one reason it still relies on coal despite these impacts.

Solution 3.2

Method: A worked judgement

Worked steps

(a) Any two: CO₂ emissions, air pollution/acid rain, land/water damage from mining
B1 **B1**. (b) It is cheap, energy-dense, reliable, and the infrastructure already exists
M1 **A1**.

Exam-style 3.3 ■ 2 marks

Explain why fossil fuels are described as a finite resource.

Solution 3.3

Worked steps

They form over millions of years — far slower than we use them — so the supply is limited and cannot be replaced on a human timescale **M1** **A1**.