

Exercise walk-through

Introduction to Sustainability ■ 5.12

eXercise

You must be able to

- define **sustainability** 可持续性
- distinguish **renewable** 可再生 and **nonrenewable** 不可再生 resources
- explain **sustainable yield** 可持续产量

Method — Sustainability

Sustainability means meeting present needs **without** reducing the ability of future generations to meet theirs — living within the planet's limits.

Method — Renewable vs nonrenewable

- **Renewable** — replenished naturally on a human timescale (sunlight, wind, trees if replanted).
- **Nonrenewable** — finite, formed over millions of years (fossil fuels, minerals).

Method — Sustainable yield

The **sustainable yield** is the amount that can be harvested **without** depleting the resource — e.g. catching only as many fish as are replaced by reproduction.

Method — A worked idea

Harvesting trees no faster than they regrow keeps the forest productive indefinitely — a sustainable yield.

Practice 2.1 ■ 1 mark

Define sustainability.

Solution 2.1

Worked steps

Meeting present needs without reducing future generations' ability to meet theirs
B1.

Practice 2.2 ■ 2 marks

Classify each: (a) coal, (b) wind.

Solution 2.2

Worked steps

(a) nonrenewable; (b) renewable **B1** **B1**.

Practice 2.3 ■ 1 mark

What is a sustainable yield?

Solution 2.3

Worked steps

The amount that can be harvested without depleting the resource **B1**.

Exam-style 3.1 ■ 1 mark

A nonrenewable resource is one that

- A** is replenished quickly
- B** takes millions of years to form
- C** never runs out
- D** is only sunlight

Solution 3.1

- A** is replenished quickly
- B** takes millions of years to form 
- C** never runs out
- D** is only sunlight

Worked steps

B — takes millions of years to form.

Exam-style 3.2 ■ 2 marks

A forest is harvested for timber.

- (a) Explain what “sustainable yield” means for this forest.
- (b) State what happens if harvest exceeds the sustainable yield.

Solution 3.2

Worked steps

(a) Harvesting trees no faster than they regrow, so the forest stays productive indefinitely **M1** **A1**. (b) The forest is depleted (declines/degraded) **B1**.

Exam-style 3.3 ■ 2 marks

Explain why fossil fuels are considered nonrenewable even though they form naturally.

Solution 3.3

Method: Renewable vs nonrenewable

Worked steps

They form over millions of years — far slower than we use them — so on a human timescale they cannot be replenished and are effectively finite **M1** **A1**.