

## 6.9 Hydroelectric Power

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Total: 10 marks****KEY WORDS** dam 大坝 • hydroelectric 水电 • reservoir 水库 • fossil fuels 化石燃料

### Objective

Build the skills to answer exam questions on **hydroelectric power**.**You must be able to:**

- describe how a **dam** 大坝 generates electricity
- state advantages (renewable, no CO<sub>2</sub>) and disadvantages (habitat, displacement)
- explain effects on rivers and fish

### 1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

#### ■ How it works

**Hydroelectric power** uses falling or flowing water (usually from a **dam**) to spin turbines and generate electricity. It is **renewable** and emits no CO<sub>2</sub> during operation.

#### ■ Advantages

- Renewable, low-carbon, reliable.
- Reservoirs provide water storage and flood control.

#### ■ Disadvantages

- The **reservoir floods** land, destroying habitat and displacing people.
- **Blocks fish migration** (e.g. salmon) unless fish ladders are built.
- **Traps sediment**, starving downstream areas of nutrients.
- Changes river flow and temperature.

#### ■ A worked judgement

A large dam gives clean, reliable power but floods a valley, blocks fish, and traps sediment — significant ecological trade-offs.

## 2 Practice

Now apply the methods above.

**2.1** What spins the turbines in a hydroelectric plant? [1]**2.2** State one advantage of hydroelectric power. [1]**2.3** State one disadvantage. [1]

## 3 Exam-style questions

**3.1** A major ecological drawback of a large dam is that it [1]

- **A** produces CO<sub>2</sub>
- **B** blocks fish migration and floods habitat
- **C** uses fossil fuels
- **D** cannot store water

**3.2** A country builds a large dam for electricity.

(a) State one benefit and one environmental cost. [2]

(b) Explain how the dam affects fish and sediment. [2]

**3.3** Explain why hydroelectric power is renewable and low-carbon. [2]

## Solutions

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**2.1** Falling/flowing water (from the dam).

**2.2** Any one: renewable, no CO<sub>2</sub>, reliable, water storage/flood control.

**2.3** Any one: floods habitat, displaces people, blocks fish, traps sediment.

**3.1 B** — blocks fish migration and floods habitat.

**3.2** (a) Benefit: clean, reliable, renewable power; cost: flooded habitat / displaced people / blocked fish. (b) The dam blocks migrating fish (unless fish ladders exist) and traps sediment, starving downstream areas of nutrients.

**3.3** It uses the water cycle (endlessly replenished by rainfall) to generate power and burns no fuel, so it emits no CO<sub>2</sub> during operation.