

Exercise walk-through

6.4

Distribution of Natural Energy Resources

AP Environmental Science

Energy Resources and Consumption

AP Environmental Science ■ Unit 6

AP Environmental Science



80% fossil

Who uses the energy, and who has it

consumption

global use is rising, fastest in developing nations, and most of it is still **fossil fuels** ; wealthy nations use the most *per person*

distribution

resources are spread **unevenly** – oil here, coal there, and renewables wherever the sun, wind or rivers happen to be

Those two facts together drive trade, dependence and conflict: the countries that **use** the most are rarely the ones that **have** the most.

Distribution, and the two big renewables

renewable

replenished on a human timescale – sun, wind, water, biomass, geothermal

nonrenewable

finite on that timescale – coal, oil, gas, uranium

uneven distribution

oil is concentrated in some regions, coal in others, and renewables depend on local sun, wind or rivers

the consequence

energy is traded and fought over, and no country's mix is freely chosen

hydroelectric

flowing water spins turbines – renewable and low-emission, but dams flood habitat, block fish migration and trap sediment

wind

renewable, clean and cheap to run – but intermittent, land- or sea-intensive, and a hazard to birds

EROEI

– energy return on energy investment – is what separates a real source from one that costs more energy than it yields.

Exercises 2.1-2.3

2.1 Why are energy resources unevenly distributed?

[1]

2.2 Where is geothermal energy most available?

[1]

2.3 What must a country with few energy resources often do?

[1]

Exercises 2.1-2.3

2.1 Why are energy resources unevenly distributed? [1]

2.1

- They depend on geology and geography, which vary from place to place
-

2.2 Where is geothermal energy most available? [1]

2.2

- Near plate boundaries / volcanic regions
-

2.3 What must a country with few energy resources often do? [1]

2.3

- Import energy

Exercise 3.1

3.1 Solar power is most available in regions that are

[1]

☐

A cloudy and dark

B sunny (often low latitude)

C near the poles only

D underground

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3.1 B

- sunny (often low latitude)

Exercise 3.2 (a)

3.2 A country has strong, steady coastal winds but no fossil fuels.

(a) Suggest a suitable energy source.

[1]

Exercise 3.2 (a)

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[1]

(a)

- Wind energy

Exercise 3.2 (b)

3.2 A country has strong, steady coastal winds but no fossil fuels.

(b) Explain how uneven resource distribution affects a country's energy choices and security. [3]

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(b)

- A country uses the resources its geography provides; those lacking resources must import, which affects trade, prices, and energy security (dependence on others)

Exercise 3.3

3.3 Explain why a nation near a plate boundary might develop geothermal energy. [2]

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3.3

- Near a plate boundary, heat from the Earth is close to the surface, so geothermal energy can be tapped to generate power