

MR SULLY UNFOLDS PHYSICS ANSWERS

Energy resources

AQA 4.1.3
Energy · Paper 1
Foundation & Higher

Name _____ Class _____ Date _____

We use energy resources for **transport**, **electricity generation** and **heating**. Each one has advantages and disadvantages.

KEY IDEAS

- Non-renewable: fossil fuels (coal, oil, gas) and nuclear fuel. They will run out.
- Renewable: bio-fuel, wind, hydro-electricity, geothermal, tides, the Sun and water waves. They are being (or can be) replenished as they are used.
- Compare resources on reliability, environmental impact and cost.

Section A · Recall

Grade 4–5

1 What is meant by a renewable energy resource? [1]

One that is being (or can be) replenished as it is used.

2 Name three non-renewable and three renewable energy resources. [3]

Non-renewable: coal

oil

natural gas / nuclear fuel

Renewable: wind

solar

tidal / hydro / geothermal / bio-fuel / waves

3 State the three main uses of energy resources. [3]

Transport, electricity generation and heating

Section B · Compare

Grade 5–6

4 Complete the table. [5]

Resource	Renewable?	Reliable?	Main environmental problem
Coal	No	Yes	CO_2 and SO_2 (acid rain)
Wind	Yes	No: depends on wind	Visual / noise
Nuclear	No	Yes	Radioactive waste
Solar	Yes	No: not at night	Uses land
Tidal	Yes	Yes: tides are predictable	Affects habitats

5 Explain why burning fossil fuels contributes to climate change. [2]

Burning fossil fuels releases carbon dioxide,

a greenhouse gas that contributes to global warming.

Section C · Stretch

Grade 7+

6 Explain why a country that uses a lot of wind and solar power still needs some reliable power stations, such as gas or nuclear. [3]

Wind and solar depend on the weather and time of day, so output varies.

Demand doesn't match these changes (e.g. high demand on still winter evenings).

Reliable stations can supply power whenever it's needed.

Exam-style question

AQA style

7 A town council must choose between building a gas-fired power station and a wind farm.

a Give one advantage of the gas-fired power station. [1]

Reliable: it can generate whenever needed / quick to start up.

b Evaluate the two options and recommend which the council should build. [6]

Gas: reliable and can respond to demand; but non-renewable and releases CO_2 (climate change).

Wind: renewable, no CO_2 while running, no fuel cost; but unreliable as it depends on the wind.

Wind turbines can be noisy and spoil the view; many are needed for the same output.

Gas will run out; its price can change.

Recommendation with a reason, e.g. wind farm to cut emissions,

with a back-up supply for times when there's little wind.

Levels marking: Level 3 (5–6) balanced comparison of both with a justified recommendation.

Total: _____ / 24

How confident am I?	Not yet	Nearly	Got it
I can name renewable and non-renewable resources	☐	☐	☐
I can compare reliability and environmental impact	☐	☐	☐
I can evaluate choices of energy resource	☐	☐	☐