

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ explain social, economic and environmental impacts of an engineered product
- ☐ describe how engineering helps limit climate change, linked to greenhouse gases
- ☐ name an emerging technology that is not yet used commercially, and describe it
- ☐ write "explain" answers with one cause and a related effect

I DO

Worked example Read how a full-mark answer is built

A company is launching an electric bike.

1 Explain one environmental and one social impact of the electric bike. (4 marks)

Full-mark answer each ✓ is one mark

Environmental: the bike produces no exhaust emissions while it is ridden ✓, so air quality in towns improves ✓. Social: the motor makes hills easier, so less fit people can cycle ✓, which improves their health and independence ✓.

Why marks are not awarded

"It is better for the environment and people will like it."

0 marks: no cause and no specific effect for either.

WE DO

Guided practice Use the starters and word bank to help you

Engineers are working to limit climate change.

2 Describe one way engineers can help limit climate change. (1 mark)

Sentence starters

One ... is ..., which means ...
Another ... is ..., so ...

Word bank

without · generates · energy · designing ·
renewable · electricity · producing ·
Efficiency

Tip: 1 marks = 1 separate, developed points.

YOU DO

On your own No notes. Check your answers afterwards.

3 Quick check: tick one box for each.

- a) Which links a wind farm to tackling climate change correctly?
☐ It is renewable, so it will last for ever ☐ It reduces the pollution caused by cars ☐ It generates electricity without releasing CO₂ ☐ It is quiet and doesn't spoil the landscape
- b) Which would score as an emerging technology?
☐ Electric cars ☐ Ammonia-fuelled engines ☐ Artificial intelligence ☐ Smartphones
- c) A full "explain" answer needs...
☐ A cause and a related effect ☐ Two causes of the same problem ☐ A list of facts about the topic ☐ A labelled diagram of the system
- d) "Cheaper running costs for the user" is a...
☐ Social impact ☐ Structural impact ☐ Environmental impact ☐ Economic impact

4 Key terms: write the letter of the matching description next to each term.

1. Social impact	_____	A An effect on people's lives: health, safety, convenience, jobs.
2. Economic impact	_____	B Link to greenhouse gases such as CO ₂ , not just "pollution".
3. Environmental impact	_____	C Meeting needs now without harming the future: renewable, efficient, long-lasting, recyclable.
4. Emerging technology	_____	D An effect on money: costs, savings, jobs, running costs.
5. Climate change answers	_____	E New and not yet in commercial use, e.g. ammonia-fuelled engines, nuclear diamond batteries.
6. Sustainability	_____	F An effect on the environment: emissions, habitats, resources, waste.

New technologies are being developed by engineers.

5 Name and describe an emerging technology. (2 marks)

A tidal turbine is installed in the Pentland Firth.

6 Explain one economic impact of the tidal turbine on the local area. (2 marks)

A city introduces an improved, accessible tram network.

7 Explain how the improvements have a positive social impact. (2 marks)

Check and reflect

Mark your answers with the answer sheet. Go back to the checklist on the site and re-rate each “I can” statement above. Which one still needs work?
