

State **one** way **users** could reduce the environmental impact of digital technology. (1)

State **two** environmental issues associated with the disposal of digital technology. (2)

State **two** ways that a user can increase the useful life of a smartphone rather than throwing it away. (2)

Describe an environmental issue associated with the manufacture of digital devices? (3)

Describe how can we reduce the energy consumption of digital devices? (2)

Explain how a short replacement cycle of digital devices impacts on the environment. (2)

Describe some of the ways that digital technology can have a positive effect on energy use. (4)

Describe some of the issues surrounding the use of primary resources to make electronic devices. (4)

ANSWERS

1. Here are some ways that users can reduce the impact of digital tech on the environment: use devices for longer; use power saving modes to save energy; recycle appropriately.
2. **E-waste** is a huge environmental problem. **Improper disposal** can lead to these toxins leaking into the soil and water, **contaminating** the environment and posing health risks to humans and wildlife. Recycling methods in some developing countries includes burning e-waste to extract valuable metals. This releases **harmful pollutants** into the air, causing respiratory problems and other health issues. Manufacturing new electronics requires mining raw materials like rare earth elements. Improper e-waste disposal means these **valuable resources** aren't recovered and recycled, leading to increased mining and environmental damage.
3. Sell it on; recycle responsibly; keep it for longer – extend its life by looking after it well – screen protector/case, replace the battery rather than the whole phone; use it as an external storage device or a camera or music player even if other functions stop working; keep software up to date and install patches to avoid cyber security attacks that might stop the phone working.
4. Mining of rare elements is an issue. The amount of water used in manufacture is an issue.
5. Adjust screen brightness; turn off Bluetooth/WiFi if not needed; use power saving modes
6. A short replacement cycle for digital devices, where users upgrade frequently, has a significant negative impact on the environment in several ways:
Increased E-waste
Increased depletion of scarce resources – rare metals, water
Increased energy use in manufacturing new devices.
7. The use of smart meters, smart lighting and smart thermostats has a positive impact because it reduces unnecessary energy use.
In industry, AI and data analysis can better predict energy use leading to less waste.
Electric vehicles have a positive impact.
Use of data to manage traffic reduces the amount of idling traffic which has a positive impact.
8. Primary resources are resources like water and metals that are mined from the earth. These are some of the issues surrounding the use of primary resources:
The extraction of non-renewable resources like rare earth metals and minerals for electronics can lead to the depletion of these primary resources, which are limited in supply.
Environmental Impact: Mining operations for these resources often result in significant environmental damage including habitat destruction, soil erosion, and water contamination.
Energy Consumption: The production of electronic devices is energy-intensive, contributing to carbon emissions and climate change if the energy is sourced from fossil fuels.
Ethical Concerns: The mining of primary resources can be associated with poor working conditions and exploitation of workers because the mining happens in countries with lower levels of worker rights than the UK.