The Sustainable School Game

Fact sheet

Carbon dioxide

Carbon dioxide is one of the greenhouse gases that cause global warming and climate change. Carbon dioxide is released when fossil fuels such as coal, oil, petrol, diesel and gas are burned.

Fossil fuels:

- are burned to create electricity and heating for our schools.
- are used to pump and treat the water that we use.
- are burned to create the energy used to make the things we use, such as paper, pencils, chairs and computers.
- are burned by the farmers who produce the food for our school dinners and packed lunches.
- are burned by the ships, planes, trains and lorries that bring goods and food to our school.
- are burned when we travel to school by car or bus.

Cutting carbon dioxide emissions helps to stop global warming and climate change.

You can find out more about the greenhouse effect by watching the short animation at **www.bbc.co.uk/climate/evidence/greenhouse_effect_img.shtml**

Energy usage

Aluminium

Using 1kg of recycled aluminium saves 14KWh of energy.

Computers

It takes about 2300KWh of energy and 28,000 litres of water to manufacture a computer.

Clothes

Around 8000 litres of water are used to make a cotton sweatshirt.

Electricity

An 'A'-rated energy efficient fridge saves 332KWh of electricity per year.
Low-energy light bulbs create 33kg less carbon dioxide per year than ordinary light bulbs.
A small wind turbine can produce around 2500KWh of electricity per year.

Solar energy

A solar panel system can produce around 1000KWh of energy per year.

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Calculating carbon dioxide emissions

Aluminium
Number of kg of aluminium x 14KWh of energy x 220g of carbon dioxide = ☐ g carbon dioxide

Computers
Manufacturing a computer creates carbon dioxide and uses water. Calculate the two amounts of carbon dioxide created and add them together to find the total.

Number of computers x 2300KWh of energy x 220g of carbon dioxide = ☐g carbon dioxide
+
Number of computers x 28,000 litres of water x 0.08 g of carbon dioxide = ☐g carbon dioxide

Electricity
Number of KWh x 520g of carbon dioxide = ☐g carbon dioxide

Energy from fossil fuels (gas, oil, coal)
Number of KWh x 220g of carbon dioxide = ☐g carbon dioxide

Energy from renewable sources (wind, solar, water)
Number of KWh x 0g of carbon dioxide = ☐g carbon dioxide

Fridges
Number of energy efficient fridges x 332 KWh of electricity x 520g of carbon dioxide = ☐ g carbon dioxide

Low-energy light bulbs
Number of low-energy bulbs x 33kg carbon dioxide

Sweatshirts
Number of sweatshirts x 8000 litres of water x 0.08g of carbon dioxide = ☐ g carbon dioxide

Transport
Car: Number of miles x 200g carbon dioxide = ☐ g carbon dioxide
Lorry: Number of miles x 340g carbon dioxide = ☐ g carbon dioxide
Aircraft: Number of miles x 530g carbon dioxide = ☐ g carbon dioxide

Water
Number of litres x 0.08g of carbon dioxide = ☐ g carbon dioxide

Note: KWh = Kilowatt hours (units used to measure energy)

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RRR cards

Recycle

Buy recycled paper. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle glass. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle

Recycle ☐☐☐ tonnes of paper. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle mobile phones. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle

Recycle ☐☐ kg of aluminium cans. How much CO_2 have you saved?

Recycle printer cartridges. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle

Recycle steel cans. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle ☐☐ school sweatshirts via swap shop. How much CO_2 have you saved?

Recycle

Recycle toner cartridges. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Recycle ☐☐ computers. How much CO_2 have you saved?

Reduce

Water: Dripping taps. Waste ☐☐☐☐ litres of water. Create CO_2.

Water: Wash hands with taps running. Waste ☐☐☐☐ litres of water. Create CO_2.

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RRR cards

Reduce

Electricity: Install ☐ 'A'-rated energy efficient fridges. How much CO_2 have you saved?

Transport: Walk to School Week. Save ☐☐☐ miles by car. How much CO_2 have you saved?

Reduce

Electricity: ☐☐ KWh wasted by lights left on over the weekend. How much CO_2 have you created?

Water: ☐☐☐☐ litres of mains water used on school garden. How much CO_2 have you created?

Reduce

Electricity: ☐☐☐ KWh wasted by photocopiers left on standby. How much CO_2 have you created?

Materials: ☐☐☐ pupils lose sweatshirts. Waste manufacturing energy. How much CO_2 have you created?

Reduce

Transport: Walking bus. Save ☐☐☐ miles by car. How much CO_2 have you saved?

Water: Sensor fitted to urinal in boy's toilet. Save ☐☐☐☐ litres of water. How much CO_2 have you saved?

Reduce

Energy: School install ☐ solar panel systems. How much CO_2 have you saved?

Transport: Install cycle sheds and lockers. Save ☐☐☐ miles by car. How much CO_2 have you saved?

Reduce

Materials: Lettuce for dinners travels ☐☐☐☐ miles by plane. How much CO_2 have you created?

Energy: Heat escapes through open doors and windows. Waste ☐☐☐☐ KWh of energy. How much CO_2 have you created?

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RRR cards

Reduce

Electricity: Install ☐☐ energy efficient light bulbs. How much CO_2 have you saved?

Materials: Buy locally grown food. Save ☐☐☐☐ miles by lorry. How much CO_2 have you saved?

Reduce

Water: Water saving devices in toilet cisterns. Save ☐☐☐☐ litres of water. How much CO_2 have you saved?

Electricity: Install ☐ small wind turbines. How much CO_2 have you saved?

Reduce

Materials: Save paper by printing less. Save ☐☐☐☐ KWh of energy. How much CO_2 have you saved?

Water: No sensor fitted on ☐ urinals. Waste ☐☐☐☐ litres of water. How much CO_2 have you created?

Re-use

Water: Water butts. Save ☐☐☐☐ litres of water. How much CO_2 have you saved?

Materials: Use both sides of A4 paper. Save ☐☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Re-use

Materials: Refill plastic water bottles. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Energy: Use rechargeable batteries. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Re-use

Materials: Swap books, music, games and toys. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?

Materials: Wear second-hand uniform. Save ☐☐☐ KWh of manufacturing energy. How much CO_2 have you saved?