



Factors affecting food security

Enough food is needed to feed a changing population

- Increasing birth rate.
- Changing diets in developing countries.
- New pests and pathogens affecting farming.
- Environmental changes e.g. famine when rains fail.
- Cost of agriculture input.
- Conflicts (war) affecting water of food availability

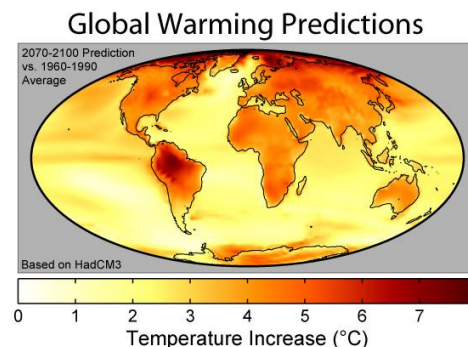
Global warming

Levels of CO₂ and methane in the atmosphere are increasing.

Decreased land availability from sea level rise, temperature rise damages delicate habitats, extreme weather events harm populations of plants and animals.

There is a global consensus about global warming and climate change based on systematic reviews of thousands of peer reviewed publications.

Global warming



Food production (biology only)

AQA GCSE ECOLOGY PART 2

Maintaining biodiversity

Human activity can have a positive impact on biodiversity

Scientists and concerned citizens

Put in place programmes to reduce the negative impacts of humans on ecosystems and biodiversity

Breeding programmes for endangered species.

Protection and regeneration of rare habitats.

Reintroduction of field margins and hedgerows in agricultural areas where farmers grow only one type of crop.

Reduction of deforestation and CO₂ emissions by some governments.

Recycling resources rather than dumping waste in landfill.

Some of the programmes potentially conflict with human needs for land use, food production and high living standards.

Farming techniques

Increasing efficiency of food production

Reduce energy waste, limiting movement, control temperature, high protein diet to increase growth.



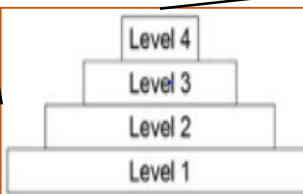
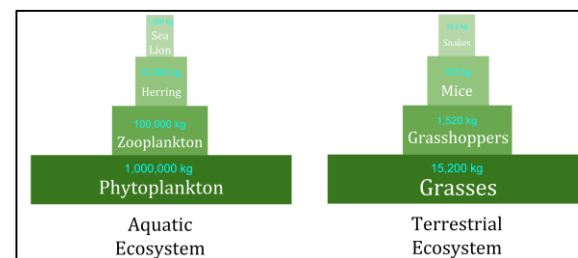
Sustainable fisheries

Fish stocks in oceans are declining

Maintain/grow fish stocks to a sustainable level where breeding continues or certain species may disappear. By controlling net size, fishing quotas.



Trophic levels and biomass (biology only)



Transfer of biomass

Biomass is lost between the different trophic levels

Producers transfer about 1% of the incident energy from light for photosynthesis.

Approximately 10% of the biomass from each trophic level is transferred to the level above.

Large amounts of glucose is used in respiration, some material egested as faeces or lost as waste e.g. CO₂, water and urea in urine.



Decomposers break down dead plants and animal matter by secreting enzymes. Small soluble food molecules than diffuse into the microorganism.

Trophic levels can be represented by numbers and biomass in pyramids.

Trophic levels are numbered sequentially according to how far the organisms is along the food chain.

Level 1	Producers	Plants and algae.
Level 2	Herbivores	Primary consumers.
Level 3	Carnivores	Secondary consumers.
Level 4	Carnivores	Tertiary consumers.

Apex predators are carnivores with no predators.