



This answer achieved 7/7



1 mark is awarded for providing the definition of carrying capacity.



1 mark is awarded for expanding on the basic definition of carrying capacity to complete the outline by commenting on the connection to human populations.



The justification of the response begins with the identification of declining (1) food, (2) water and (3) energy resources.



The lack of ability of Earth to maintain functional nutrient cycles to assimilate waste is a valid argument for exceeding carrying capacity.



The argument for use of technology to further “stretch” the carrying capacity is a valid point.



The student suggests new technology to cope with the waste.

Carrying capacity is the number of individuals that an environment can sustainably support over a long period of time. [1] With increasing human population, many – especially Maruthians – are convinced that the Earth has reached its carrying capacity for humans. [1] Reasons for this include the overall decline in global food, water and energy resources, and there is the human response to this of a decreasing urban birth rate. [1] The effects are very devastating – MEDCs continue to consume more than they need while LEDCs suffer with export driven crops and a growing hungry population. Maruthians would believe that the surge of decrease in food supply means that there will no longer be enough food to go around, signalling the Earth has reached its capacity to produce food crops. [1] In urban areas with big population, there is an increasing amount of pollution, and if more of this is to happen, the Earth cannot possibly maintain functional nutrient cycles to assimilate these wastes and pollution. [1] Freshwater supply is also a concern. As global warming worsens, there will be even less water supplied to a huge population. Therefore, there are trends that in MEDCs such as Germany, there is an obvious decrease in birth rate to counteract these impacts. However, it is important to remember that, at a new age of technological advances, human populations can always turn to technology for answer. Surely we should start conserving our environment like the tropical rainforest ecosystems, but new technology can mean new energy sources, new food crops as well as new resources with new ways to exploit them that we have not come up with before. [1] It is always important to believe in the possibility of a growing technological horizon, to tackle population concerns. If we find new ways to assimilate wastes as we produce more for our population, it would be a perfect solution to those who are sceptical of continual human population growth. [1]



Examiner report

This is a very good answer. The student starts with a definition and refers to the Malthusian view (incorrectly spelt as Maruthian). The student suggests that a decline in a variety of resources such as food and energy is symptomatic of a Malthusian crisis. Problems in urban areas such as pollution are identified. The student then takes a counterview and it seems to be the student's own view that technology has the ability to provide for more people. Overall, this is a balanced answer. Although there are not many examples, apart from Germany, and the generic use of MEDCs and LEDCs, these do not detract from this answer.

3.8 Environmental demands of human populations



You should be able to:

- explain the concept of an ecological footprint as a model for assessing the demands that human populations make on their environment
- calculate from appropriate data the ecological footprint of a given population, stating the approximations and assumptions involved
- describe and explain the differences between the ecological footprints of two human populations, one from an LEDC and one from an MEDC
- discuss how national and international development policies and cultural influences can affect human population dynamics and growth