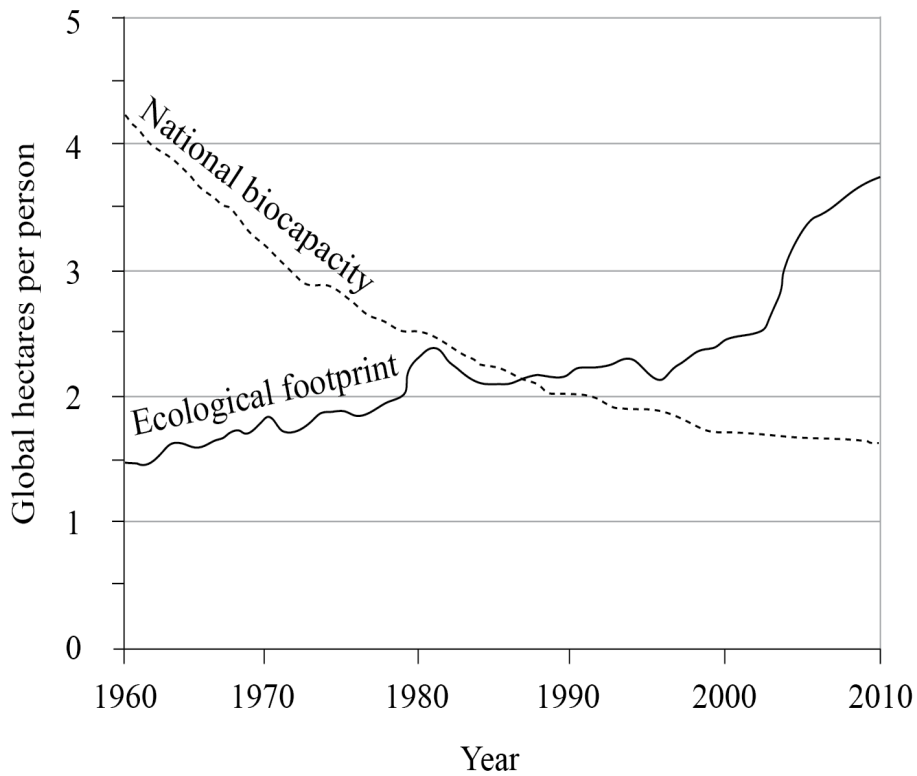

SL Paper 1

“The ecological footprint is the best measure of the relationship between population and resources for different countries.” Discuss this statement.

Examine the changing importance of energy sources other than oil.

The graph shows the ecological footprint for one country from 1960 to 2010.



[Richard Rhoda and Tony Burton. *Geo-Mexico: The Geography and Dynamics of Modern Mexico*. Sombrero Books, 2010. Used with permission.]

- Define *ecological footprint*. [2]
- Describe how the ecological footprint of this country has changed. [3]
- Suggest reasons why this country's ecological footprint decreased in the 1980s. [2]
- Explain the anti-Malthusian view of the relationship between population and resources. [5]

Examine why most countries want to reduce their dependence on oil.

Examine the changing importance of oil as an energy source.

a. State and outline the units used to measure the global ecological footprint. [2]

Units:

Outline:

b. Suggest **two** reasons why the total ecological footprint of a country may grow very rapidly in the future. [4]

Reason 1:

Reason 2:

c. Explain the neo-Malthusian view of the relationship between population and resource consumption. [4]

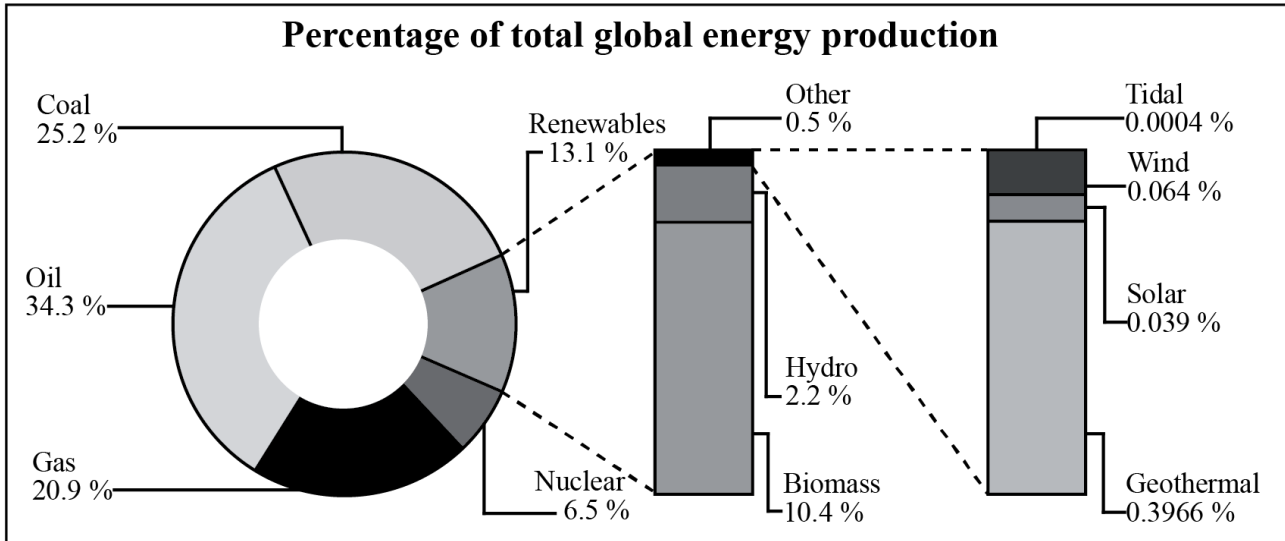
Discuss the ways in which the consumption of **one or more** resources can be reduced.

a. Define *ecological footprint*. [2]

b. Describe what is meant by a neo-Malthusian view. [3]

c. Explain **three** benefits of a strategy designed to reduce resource consumption. [3x2]

The graph shows the different sources of global energy production.



[Source: Sunlit uplands, *The Economist* May 31 2007, The Economist Newspaper Limited. Reproduced with permission.]

b. Suggest **two** reasons why some areas of the world are unlikely to depend entirely on renewable energy sources.

[2x2

c. Analyse how the global pattern of oil production has changed in recent decades.

[5]

Examine the relationship between energy consumption and environmental sustainability.

“The Millennium Development Goals (MDGs) are unlikely to be achieved without a dramatic increase in global energy consumption.” Discuss this statement.

The table ranks the ten countries which had the largest oil consumption in 2010.

| Rank | Country | Oil consumption (thousands of barrels/day) |
|------|--------------|--|
| 1 | USA | 19 148 |
| 2 | Country A | 9057 |
| 3 | Japan | 4451 |
| 4 | India | 3319 |
| 5 | Russia | 3199 |
| 6 | Saudi Arabia | 2812 |

| | | |
|----|-------------|------|
| 7 | Brazil | 2604 |
| 8 | Germany | 2441 |
| 9 | South Korea | 2384 |
| 10 | Canada | 2276 |

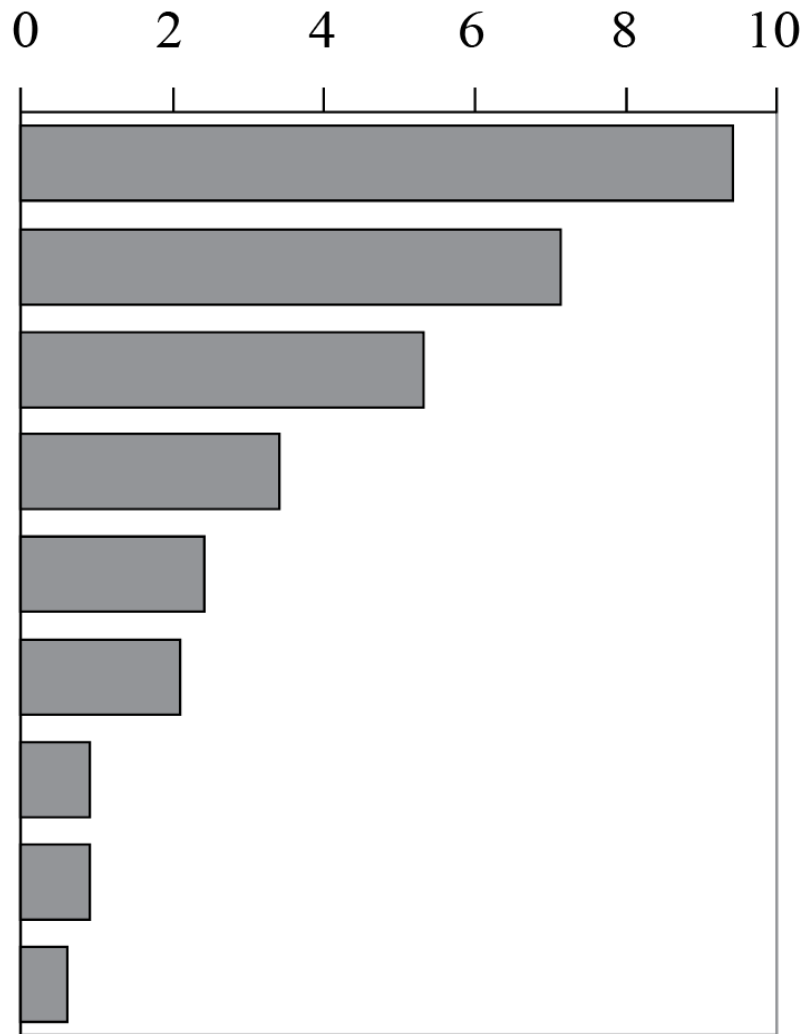
[Source: *BP Statistical Review of World Energy* June 2011]

- a. Identify Country A. [1]
- b. Briefly describe what is meant by the OPEC cartel. [2]
- c. Explain **two** geopolitical impacts of the rise in global oil consumption since 1990. [4]
- d. Suggest **two** reasons why sources of renewable energy have become more important in many countries in recent years. [4]

“Falling fertility rates are no guarantee of reduced resource consumption.” Discuss this statement, referring to examples.

The graph shows the ecological footprints of various countries.

Global hectares per person



[Source: R Rhoda and T Burton, *Geo-Mexico: The Geography and Dynamics of Modern Mexico* (Sombrero Books, 2010)]

- a. Define *ecological footprint*. [2]
- b. Describe how the pattern of ecological footprints shown by the graph reflects economic development. [2]
- c. (i) Outline a strategy at a local or national scale which is designed to reduce the consumption of **one** named resource. [2+2]
- (ii) Explain **two** reasons why the strategy described in (i) **either** has **or** has not been a success.

Examine the geopolitical and environmental impacts of the production and/or consumption of fossil fuels such as oil.

- a. Identify **three** fossil fuels. [2]
- b. Suggest **two** reasons for the changing importance of nuclear energy. [2x2]

c. Explain the relationship between energy usage and ecological footprint for **one or more** countries.

[5]

Discuss why resource conservation strategies may be more effective than population control in reducing global resource consumption.

“There is no truly sustainable solution to the world’s growing energy problems.” Discuss this statement.

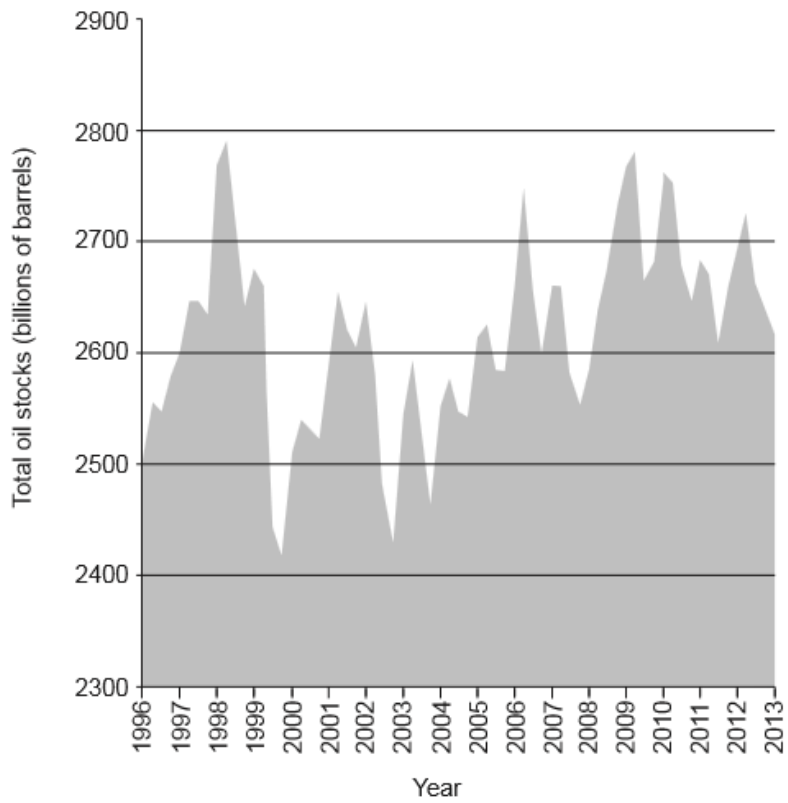
“The world is far too dependent on oil.” To what extent do you agree with this statement?

“Only high-income countries can effectively develop sustainable sources of energy.” Discuss this statement, referring to examples.

“A falling fertility rate is always beneficial to a country.” Discuss this statement.

“We still have the resources to live as wastefully as we want.” Discuss this statement.

The graph shows the total oil stocks of the world’s major economies in billions of barrels. (Oil stocks are barrels of oil that have already been extracted and stored for future use.)



[Source: adapted from www.valuewalk.com and US Energy Information Administration (EIA)]

- a. State the year in which total oil stocks were at their peak. [1]

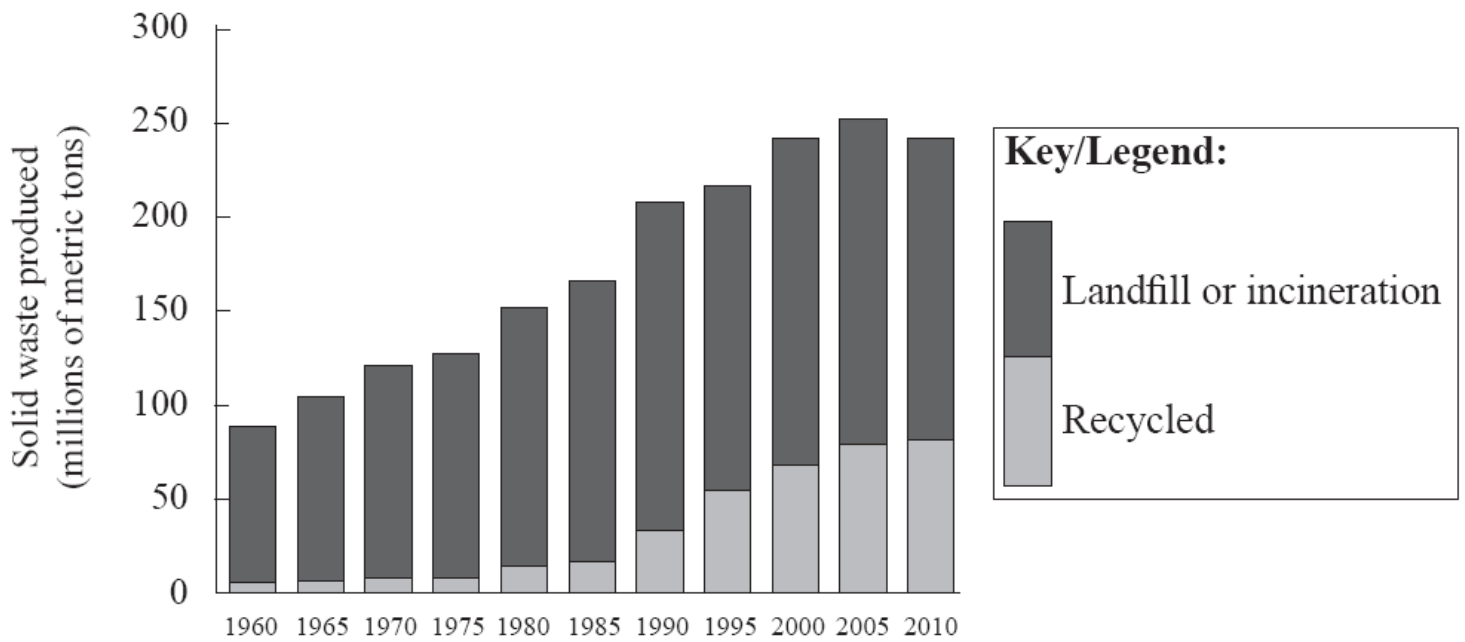
 - b. Referring to the graph, describe the trend in total oil stocks since the year 2000. [3]

 - c. Suggest **three** reasons why total oil stocks may change from one year to the next. [6]
 - 1.

 - 2.

 - 3.
-

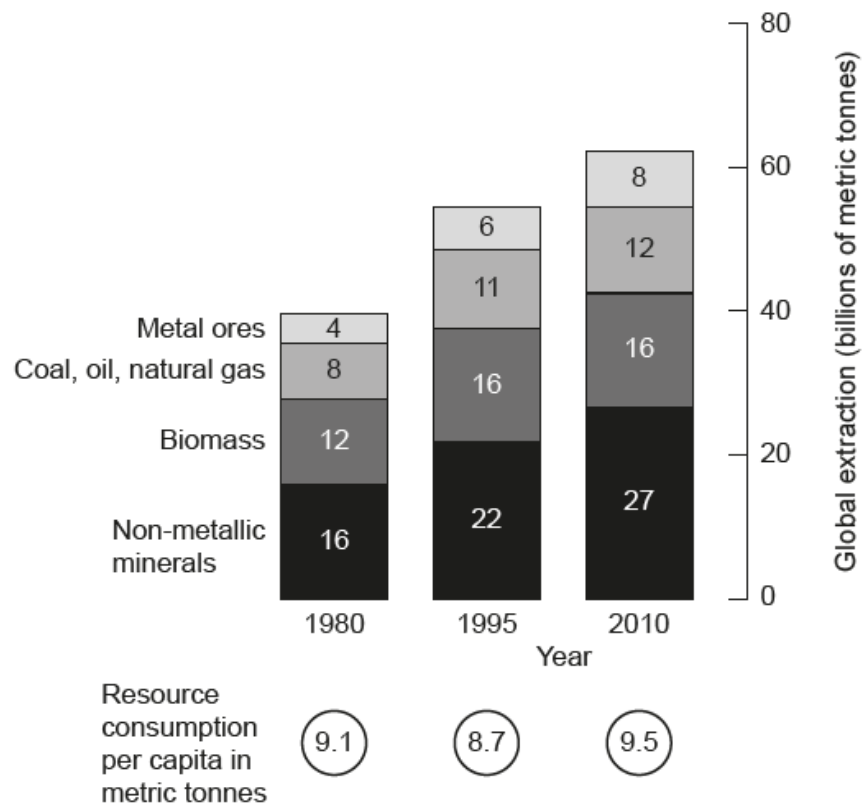
The graph shows the solid waste produced in one country from 1960 to 2010.



[Source: © International Baccalaureate Organization 2013]

- a. Describe the trends shown by the graph. [4]
- b(i) State **one** example of resource substitution. [1]
- b(ii) Explain **one** benefit of the resource substitution you have chosen in (b)(i). [2]
- c. Referring to examples, distinguish between waste recycling and waste reduction. [4]

The graph shows the global extraction of several important groups of resources and per capita consumption rates.

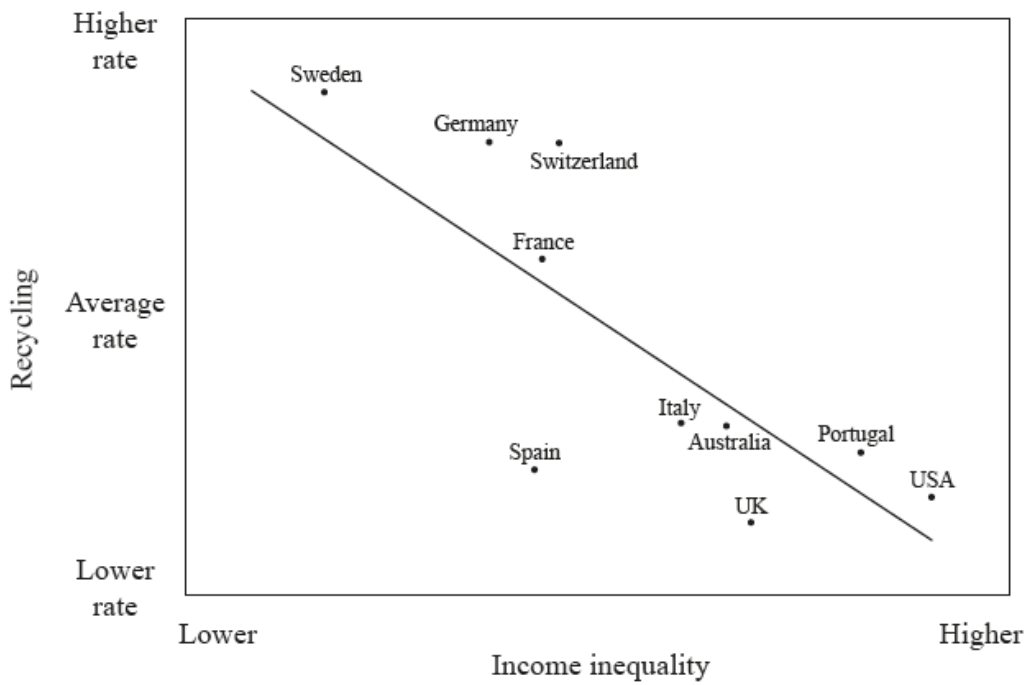


[Source: Ellen MacArthur Foundation, www.ellenmacarthurfoundation.org]

- Referring to the graph, describe the trend in global biomass extraction between 1980 and 2010. [3]
- Suggest **two** reasons why the total resource consumption per capita decreased between 1980 and 1995, even though global resource extraction was increasing. [4]
- Suggest **two** disadvantages of recycling materials as a strategy to reduce resource consumption. [4]

4. Patterns in resource consumption

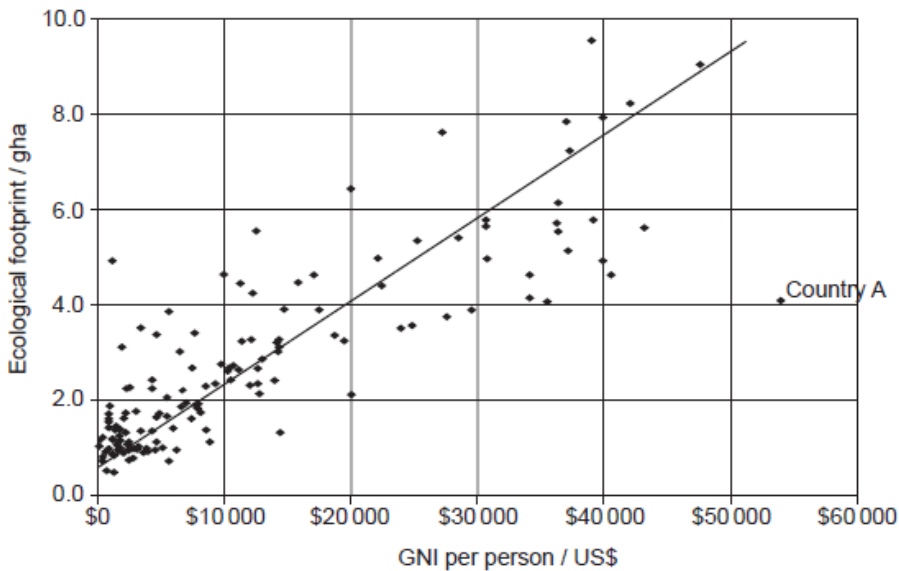
The graph shows income inequality and recycling rates for selected high-income countries in 2010.



[Source: ©The Equality Trust. Used with permission.]

- Describe the relationship shown on the graph. [3]
- Explain **two** environmental benefits of recycling. [4]
- Explain **two** disadvantages of **one** named source of renewable energy. [4]

The graph shows the relationship between GNI per person and ecological footprint, in global hectares (gha), for a number of countries.



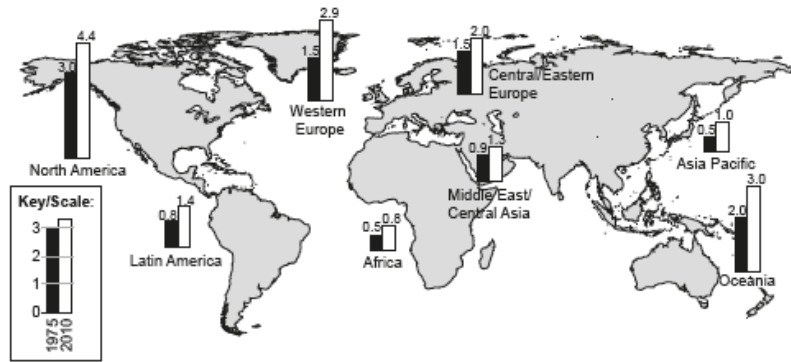
[Source: adapted from <http://paulchefurka.ca>]

- State the minimum ecological footprint in global hectares for a country with a GNI of US\$20 000 per person. [1]

- b. Referring to the graph, describe the relationship between GNI per person and ecological footprint. [3]
- c. Suggest **one** reason why country A does not fit the general pattern. [3]
- d. Using examples, distinguish between recycling and resource substitution. [4]

The map shows the ecological footprint of continental regions in 1975 and 2010. On this map the ecological footprint is a measure of the number of

planet Earths needed to support the population.

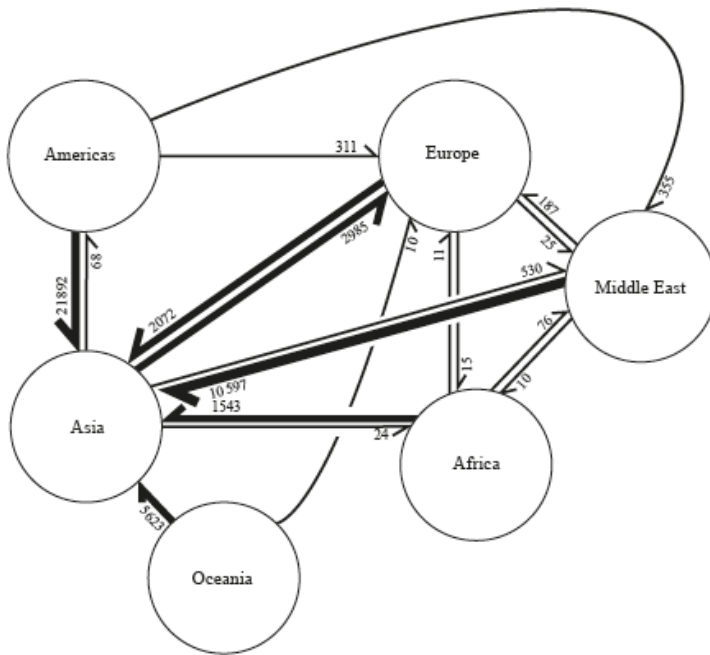


[Source: © International Baccalaureate Organization 2015]

- a. State which **two** regions had the most sustainable ecological footprint in 1975. [2]
- b. Explain the pattern of regional ecological footprints in 2010. [4]
- c. Explain the anti-Malthusian view of the relationship between population and resources. [5]

Patterns in resource consumption

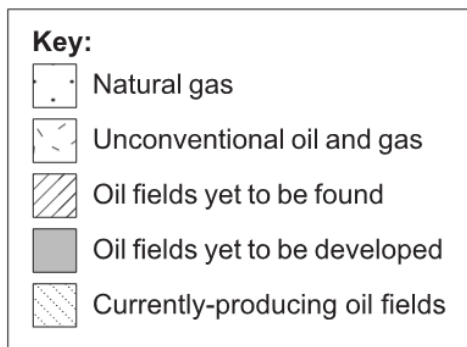
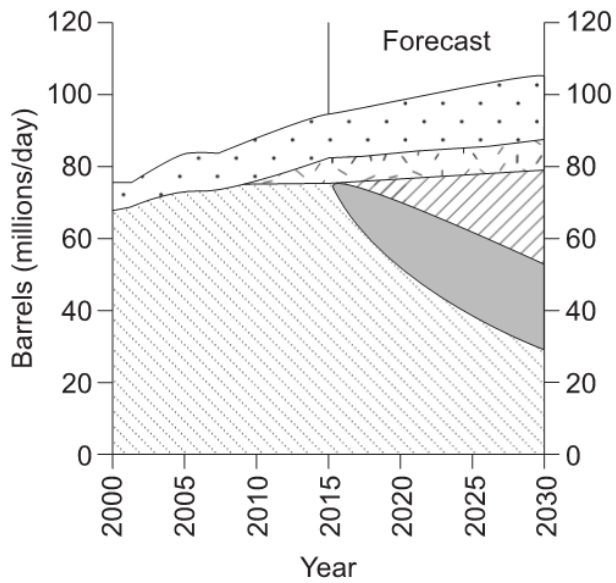
The diagram shows the international movement of e-waste*. The numbers indicate the volume in metric tons. The arrows indicate the direction of movement and their width is proportional to the volume of movement.



[Source: adapted from J Lepawsky and C McNabb, (2010), Mapping international flows of electronic waste. *The Canadian Geographer / Le Géographe canadien* 54 (2), pages 177-195 ©/ Canadian Association of Geographers / L'Association canadienne des géographes]

- a. With reference to the diagram, describe the movement of e-waste into **and** out of Asia. [4]
- b. Briefly explain the limitations of recycling as a strategy to reduce global resource consumption. [3]
- c. Explain the neo-Malthusian view of the relationship between population size and resource consumption. [4]

The graph shows a forecast for how future demand for oil and natural gas will be met.



[Source: © 2009 New Scientist Ltd. All rights reserved. Distributed by Tribune Content Agency, LLC.]

a.i. Describe the trend for currently-producing oil fields shown on the graph for the period 2015–2030. [3]

a.ii. Suggest **two** possible reasons for the trend you described in (a)(i). [2]

Reason 1:

Reason 2:

b. Briefly suggest what is meant by “unconventional” oil and gas. [2]

c. Explain **two** limitations of **one named** source of renewable energy. [4]

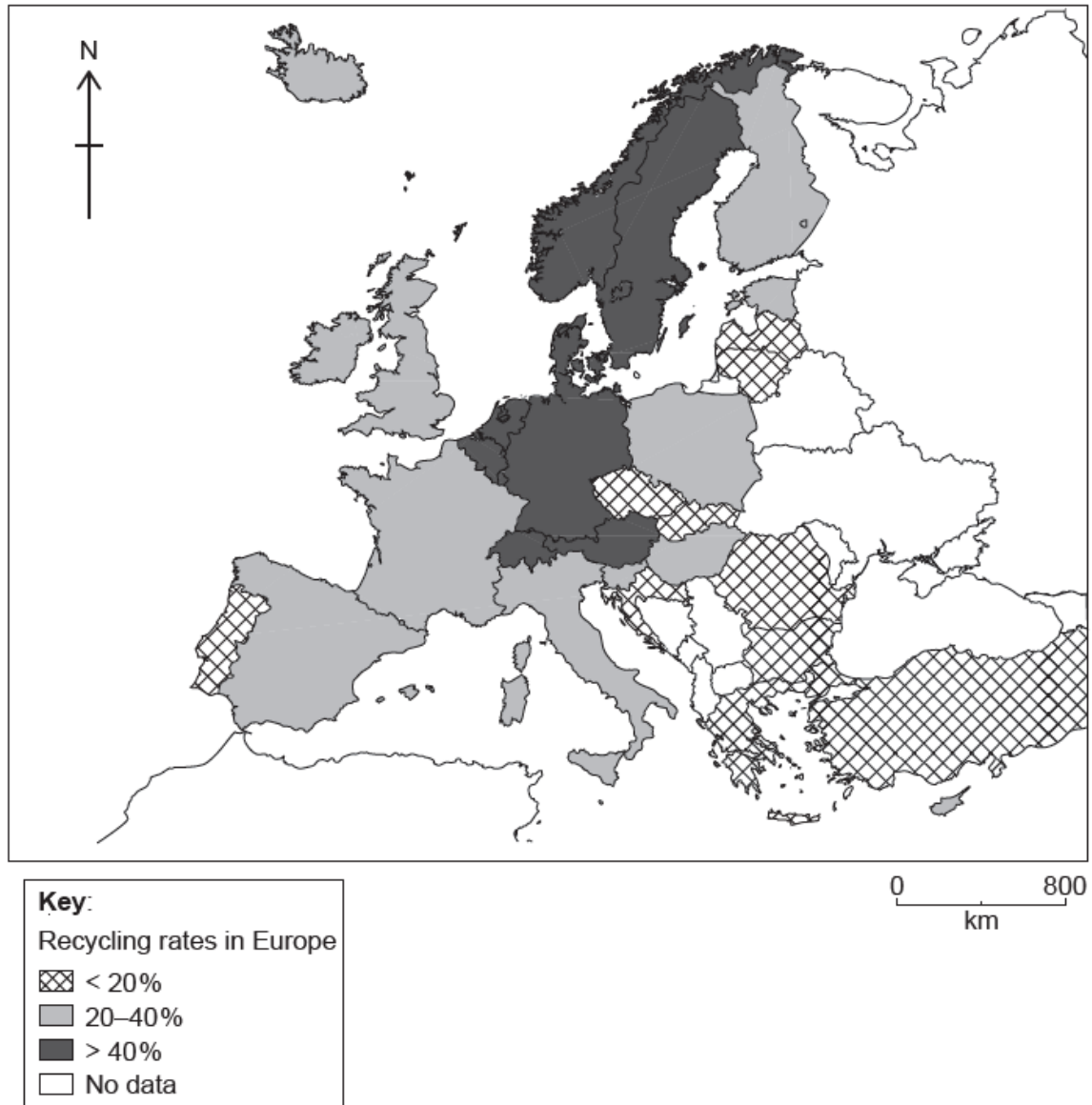
Source of renewable energy:

Limitation 1:

Limitation 2:

Patterns in resource consumption

The map shows recycling rates for a selection of countries in Europe in 2016.



[Source: Data adapted from European Environment Agency: www.eea.europa.eu, European Commission (c) European Union, 1995-2018 and Eurostat © European Union, 1995 - today. Eurostat do not take any responsibility for any translations or modifications to the data.]

- Describe the pattern of recycling rates shown on the map. [3]
- Suggest **two** reasons why recycling rates differ greatly between countries. [4]
- Explain **two** strengths **and one** weakness of **one** local or national strategy aimed at reducing the consumption of **one named** resource. [6]

Named resource:

Local or national strategy:

Strength 1:

Strength 2:

Weakness:
