AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____
I declare this is my own work.

GCSE
GEOGRAPHY

Paper 2 Challenges in the Human Environment

Friday 9 June 2023 Morning Time allowed: 1 hour 30 minutes

Materials
For this paper you must have:
- the OS map key insert (enclosed)
- a pencil
- a rubber
- a ruler.

You may use a calculator.

Instructions
- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.

Answer all questions in Section A and Section B.
Answer Question 3 and one other question in Section C.

- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need additional extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The total number of marks available for this paper is 88.
- Spelling, punctuation, grammar and specialist terminology will be assessed in Question **01.11**.
- HIC is a higher income country.
- LIC is a lower income country.
- NEE is a newly emerging economy.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	

Do not write outside the box

For the multiple-choice questions, shade the circle next to the correct answer.

CORRECT METHOD WRONG METHODS

If you want to change your answer you must cross out your original answer as shown.

If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.

Section A Urban issues and challenges

Answer **all** questions in this section.

Question 1 Urban issues and challenges

0 1 . 1 Give **one** reason for the growth of megacities in LIC/NEEs.

[1 mark]

_____

_____

Do not write outside the box

Study **Figure 1**, a table showing the projected population of the world's ten largest cities in 2030.

Figure 1

City	Projected population in 2030 (millions)
Delhi, India	38.9
Tokyo, Japan	36.6
Shanghai, China	32.9
Dhaka, Bangladesh	28.0
Al-Qahirah (Cairo), Egypt	25.5
Mumbai (Bombay), India	24.6
Beijing, China	24.3
Mexico City, Mexico	24.1
Sao Paulo, Brazil	23.8
Kinshasa, Democratic Republic of the Congo	21.9

0 1 . 2 Calculate the mean size of the cities shown in **Figure 1**.

Answer to **one** decimal place.

[2 marks]

Show your working

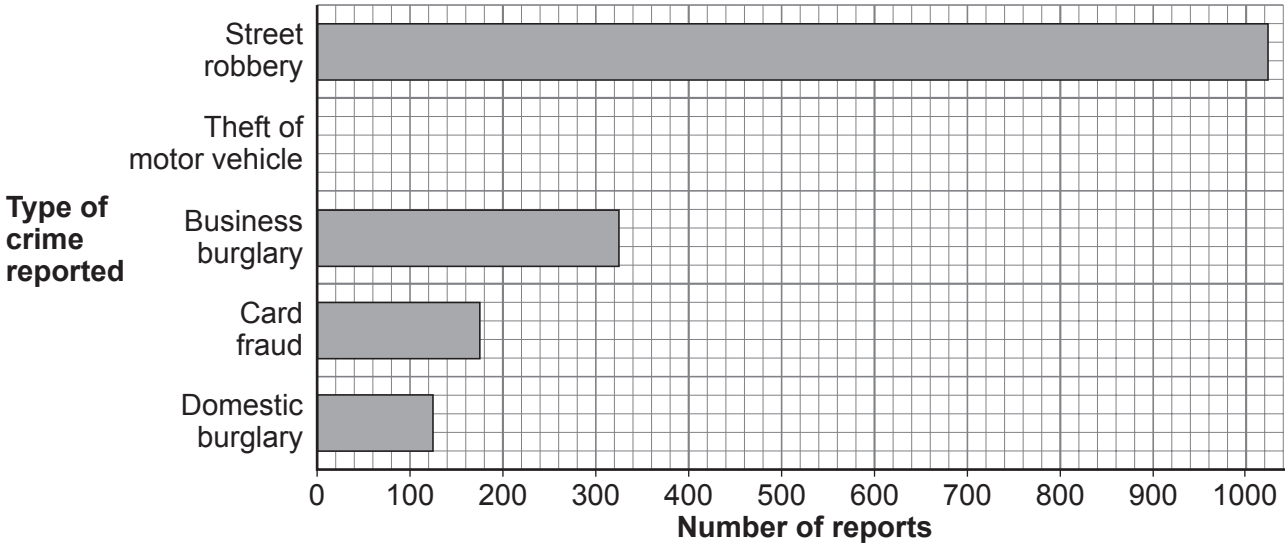
Answer _____ millions

Question 1 continues on the next page

Do not write outside the box

Study **Figure 2**, a graph showing selected crimes reported on Twitter in Mexico City, a city in a NEE, September 2016 – April 2017.

Figure 2



0 1 . 3 Complete **Figure 2** using the following data.

[1 mark]

Crime	**Number of reports Sept 2016 – Apr 2017**
Theft of motor vehicle	350

0 1 . 4 Approximately how much more frequent is street robbery than business burglary?

Shade **one** circle only.

[1 mark]

A 2 times ⬭

B 3 times ⬭

C 4 times ⬭

D 5 times ⬭

Do not write outside the box

0 1 . 5 Outline **one** reason why reducing crime is a challenge in some LIC/NEE cities.

[2 marks]

_____

_____

_____

_____

Question 1 continues on the next page

Do not write outside the box

Study **Figure 3**, a photograph of a street class run by volunteers in Mexico City.

Figure 3

0 1 . 6 To what extent has urban growth created social opportunities?

Use **Figure 3** and a LIC/NEE example you have studied.

[6 marks]

Do not write outside the box

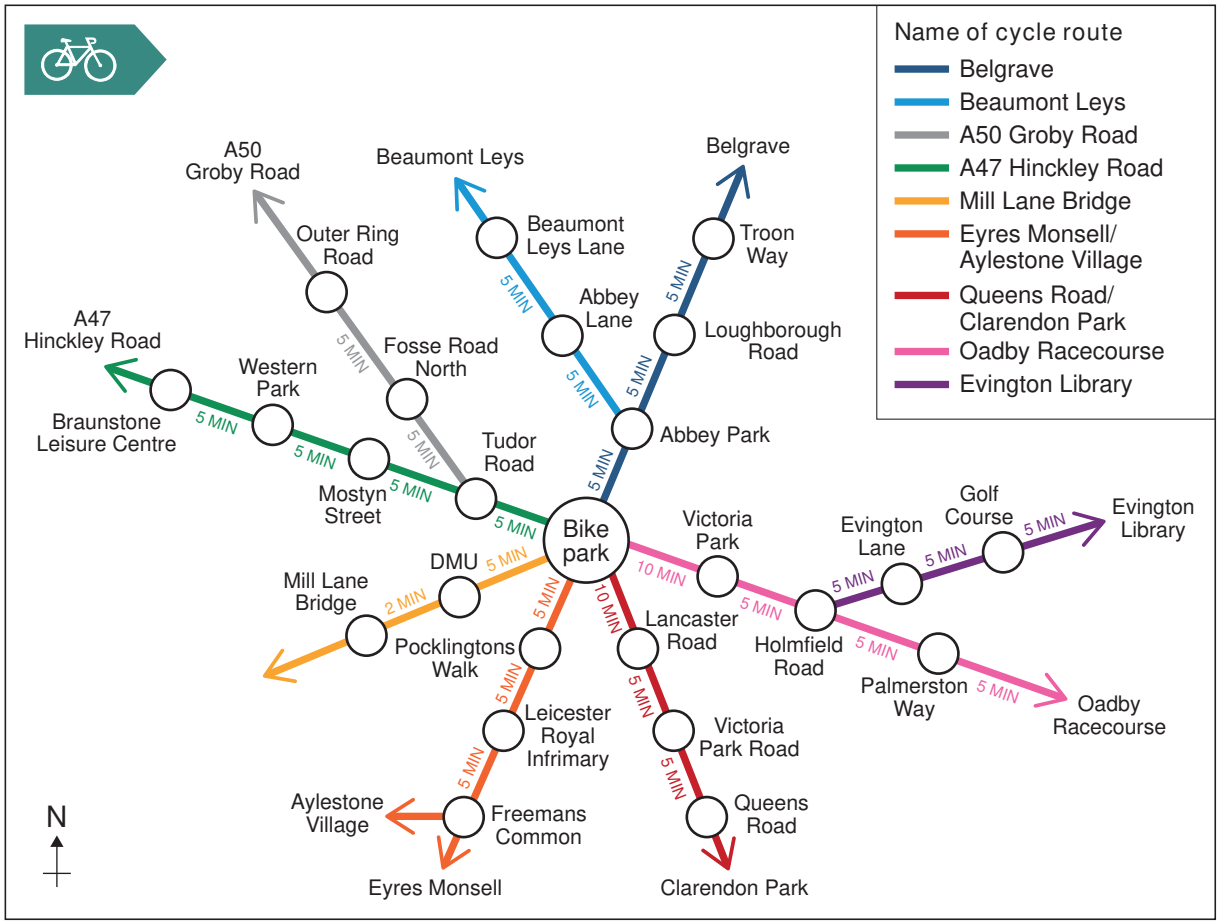
Extra space

Question 1 continues on the next page

Do not write outside the box

Study **Figure 4**, a map of Leicester's cycle routes in 2020.

Figure 4



0 1 . 7 Which route would you use to travel south west from the bike park?

Shade **one** circle only.

[1 mark]

A A47 Hinckley Road ⬭

B A50 Groby Road ⬭

C Mill Lane Bridge ⬭

D Oadby Racecourse ⬭

0 1 . 8 How long would it take to cycle from the bike park to Evington Library?

[1 mark]

_____ minutes

Do not write outside the box

0 1 . 9 Suggest how urban transport strategies can be used to reduce traffic congestion.

Use **Figure 4** and your own understanding.

[4 marks]

Extra space

0 1 . 1 0 Outline **one** way in which a UK city you have studied is important in the UK.

[2 marks]

Name of UK city

Importance

Question 1 continues on the next page

Do not write outside the box

0 1 . 1 1 'Urban change in the UK has created more economic opportunities than social opportunities.'

Evaluate this statement.

Use a UK city you have studied.

[9 marks]
[+ 3 SPaG marks]

Name of UK city _____

Extra space _____

Do not write outside the box

33

End of Section A

Turn over for Section B

Do not write outside the box

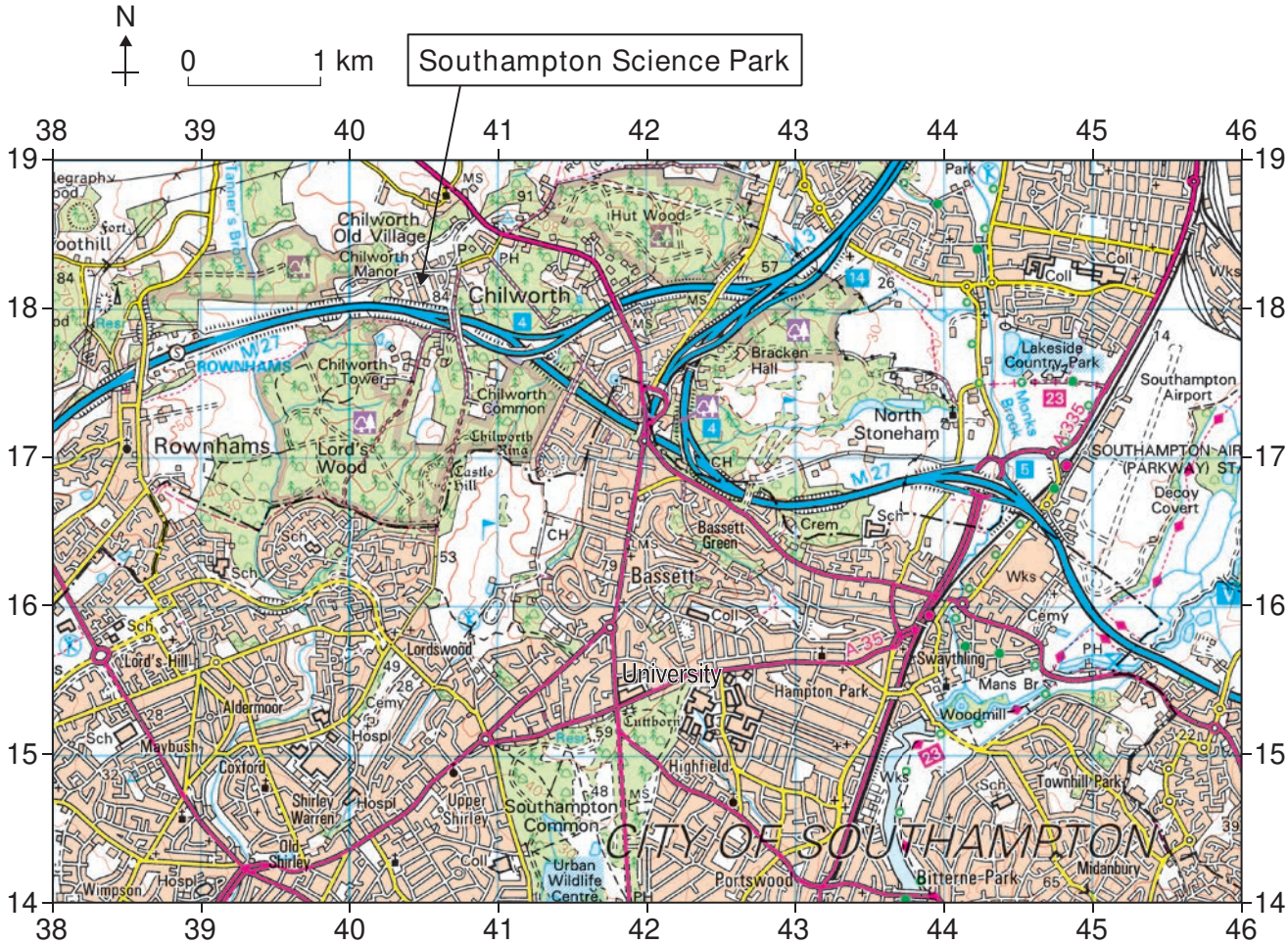
Section B The changing economic world

Answer **all** questions in this section.

Question 2 The changing economic world

Study **Figure 5**, a 1:50 000 Ordnance Survey map of an area of Southampton, a city in the UK.

Figure 5



Do not write outside the box

0 2 . 1 Using **Figure 5**, give the direction from the Southampton Science Park in grid square 4018 to the university in grid square 4215.

Shade **one** circle only.

[1 mark]

A North East ⬭

B North West ⬭

C South East ⬭

D South West ⬭

0 2 . 2 Using **Figure 5**, complete the table to give **two** pieces of map evidence showing why the site in grid square 4018 is a good location for the science park.

An example has been completed for you.

[2 marks]

Evidence	**Grid square**
Near university	4215

Question 2 continues on the next page

Do not write outside the box

Study **Figure 6**, information about the Southampton Science Park.

Figure 6

Provides high-quality office, laboratory and meeting facilities in a healthy and inspiring environment.

72 acres of green space, lakes, walking routes and picnic spots.

27 acres are a protected conservation area.

Committed to minimising waste and making buildings more energy efficient.

0 2 . 3 To what extent are modern industrial developments environmentally sustainable?

Use **Figure 6** and your own understanding.

[6 marks]

Do not write outside the box

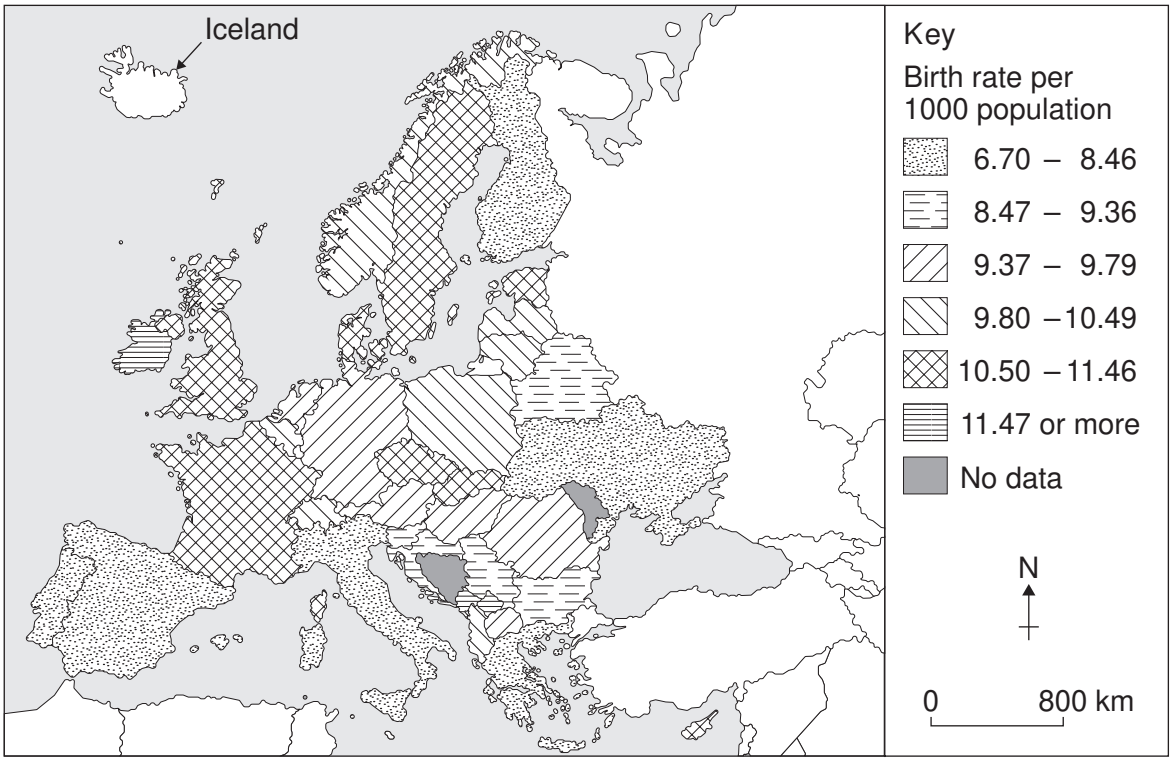
Extra space

Question 2 continues on the next page

Do not write outside the box

Study **Figure 7**, a map showing birth rates in Europe (excluding Russia) in 2019.

Figure 7



0 2 . 4 Complete **Figure 7** using the following data.

[1 mark]

Country	**Birth rate**
Iceland	12.3

Do not write outside the box

0 2 . 5 Outline **one** disadvantage of using birth rates as a measure of development.

[2 marks]

_____

_____

_____

_____

0 2 . 6 Which measure of development combines income, life expectancy and education levels?

Shade **one** circle only.

[1 mark]

A Gross National Income (GNI) per head ⬭

B Human Development Index (HDI) ⬭

C Infant mortality rate (IMR) ⬭

D People per doctor ⬭

0 2 . 7 Outline **one** physical cause of uneven development.

[2 marks]

_____

_____

_____

_____

Question 2 continues on the next page

Do not write outside the box

Study **Figure 8**, a table showing the debt of selected countries in 2019.

Figure 8

Country	**Total debt (millions US$)**
Brazil	569 398
India	560 035
South Africa	188 102
Egypt	115 080
Peru	64 204
Bangladesh	57 088
Jordan	33 683

0 2 . 8 Calculate the interquartile range for the data in **Figure 8**.

[2 marks]

Show your working

Answer: interquartile range _____

Do not write outside the box

Study **Figure 9**, information from a report on debt.

Figure 9

Figure 9 cannot be reproduced here due to third-party copyright restrictions

0 2 . 9 Suggest how debt relief can help reduce the development gap.

Use **Figure 9** and your own understanding.

[4 marks]

Extra space

Question 2 continues on the next page

Do not write outside the box

0 2 . 1 0 Suggest how economic development can bring improvements to quality of life but at a cost to the environment.

Use a case study of a LIC/NEE in your answer.

[9 marks]

Name of LIC/NEE _____

Extra space _____

Do not write outside the box

30

End of Section B

Turn over for Section C

Do not write outside the box

Section C The challenge of resource management

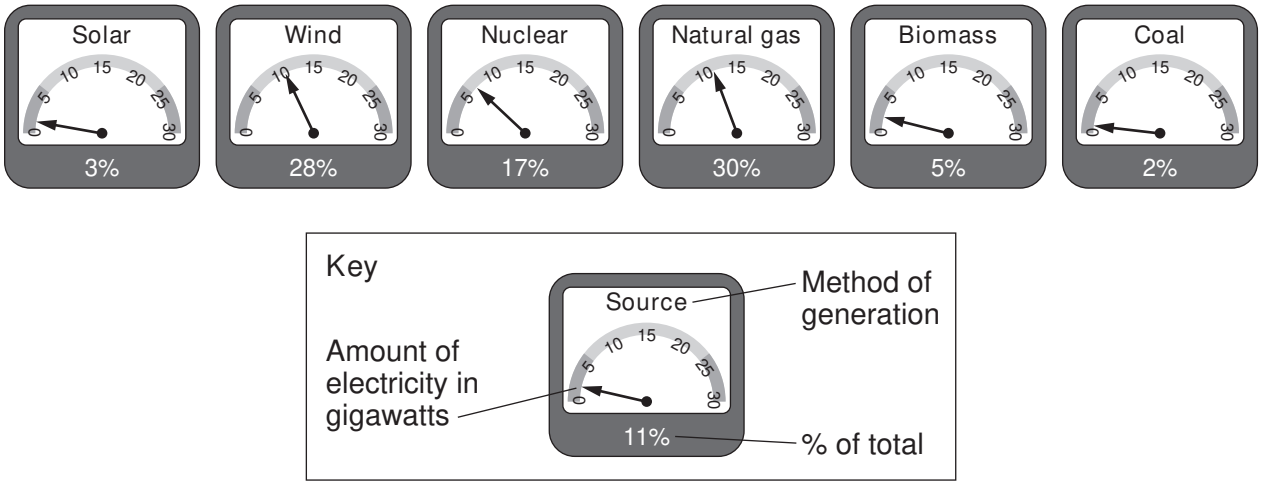
Answer **Question 3** and

either Question 4 (Food) **or** Question 5 (Water) **or** Question 6 (Energy).

Question 3 The challenge of resource management

Study **Figure 10**, information showing the major sources of the UK's electricity at 3.20 pm on 27 October 2020.

Figure 10



0 3 . 1 What is solar energy?

[1 mark]

_____

_____

Do not write outside the box

0 3 . 2 Suggest how the energy mix used to generate the UK's electricity has changed in the last 30 years.

Use **Figure 10** and your own understanding.

[2 marks]

_____

_____

_____

_____

0 3 . 3 Explain why demand for different energy sources has changed in the UK.

[3 marks]

_____

_____

_____

_____

_____

_____

Question 3 continues on the next page

Do not write outside the box

Study **Figure 11a** and **Figure 11b**.

Figure 11a is a cartoon about sources of food in the UK.

Figure 11b is a pie chart showing carbon emissions from stages of the food supply chain.

Figure 11a

Figure 11b

Figure 11b cannot be reproduced here due to third-party copyright restrictions

Do not write outside the box

0 3 . 4 'Trying to reduce the carbon footprint of food in the UK creates opportunities and challenges.'

Use **Figure 11a** and **Figure 11b** to explain this statement.

[6 marks]

Extra space

12

End of Question 3

Turn over for the next question

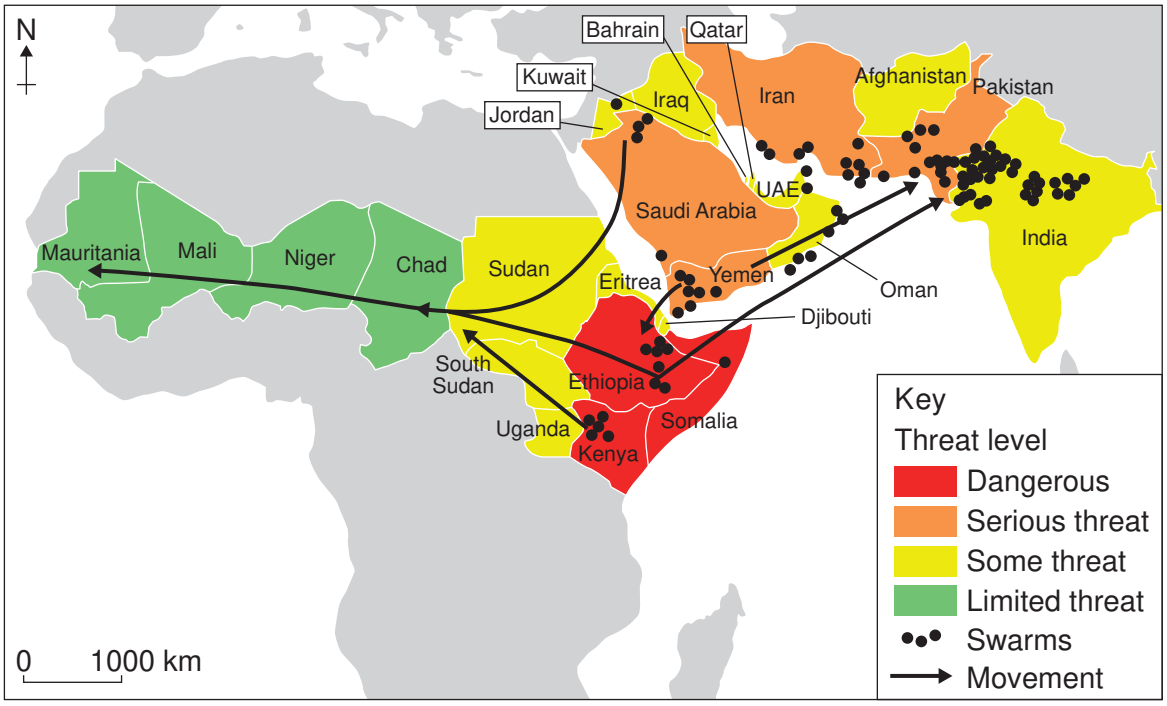
Do not write outside the box

Answer **either** Question 4 (Food) **or** Question 5 (Water) **or** Question 6 (Energy).

Question 4 Food

Study **Figure 12**, a map of parts of Africa, Asia and the Middle East. The map shows the locust forecast for May–July 2020.

Figure 12



0 4 . 1 How many of the countries shown in **Figure 12** had a serious threat level?

Shade **one** circle only.

A 3

B 4

C 5

D 6

What percentage of the 25 countries shown had a serious threat level?

[2 marks]

Do not write outside the box

0 4 . 2 Describe the pattern of the threat from locusts shown in **Figure 12**.

[2 marks]

_____

_____

_____

_____

0 4 . 3 What is food insecurity?

[1 mark]

_____

_____

Question 4 continues on the next page

Do not write outside the box

0 4 . 4 Explain how pests and diseases can affect food supply.

[2 marks]

Study **Figure 13**, information about appropriate technology being used to improve farming in parts of Africa.

Figure 13

Zaï is a farming technique used in the western Sahel region (Burkina Faso, Niger, Mali).
It uses holes dug in the soil during the dry season to catch water and concentrate compost.

This is an old technique updated by filling the holes with manure and compost to provide plant nutrients. The manure attracts termites, whose tunnels help break up the soil. Zaï holes improve the yields of trees, sorghum and millet by up to 500 per cent.

Do not write outside the box

0 4 . 5 To what extent can appropriate technology and other strategies increase food supply?

Use **Figure 13** and your own knowledge.

[6 marks]

Extra space

13

End of Question 4

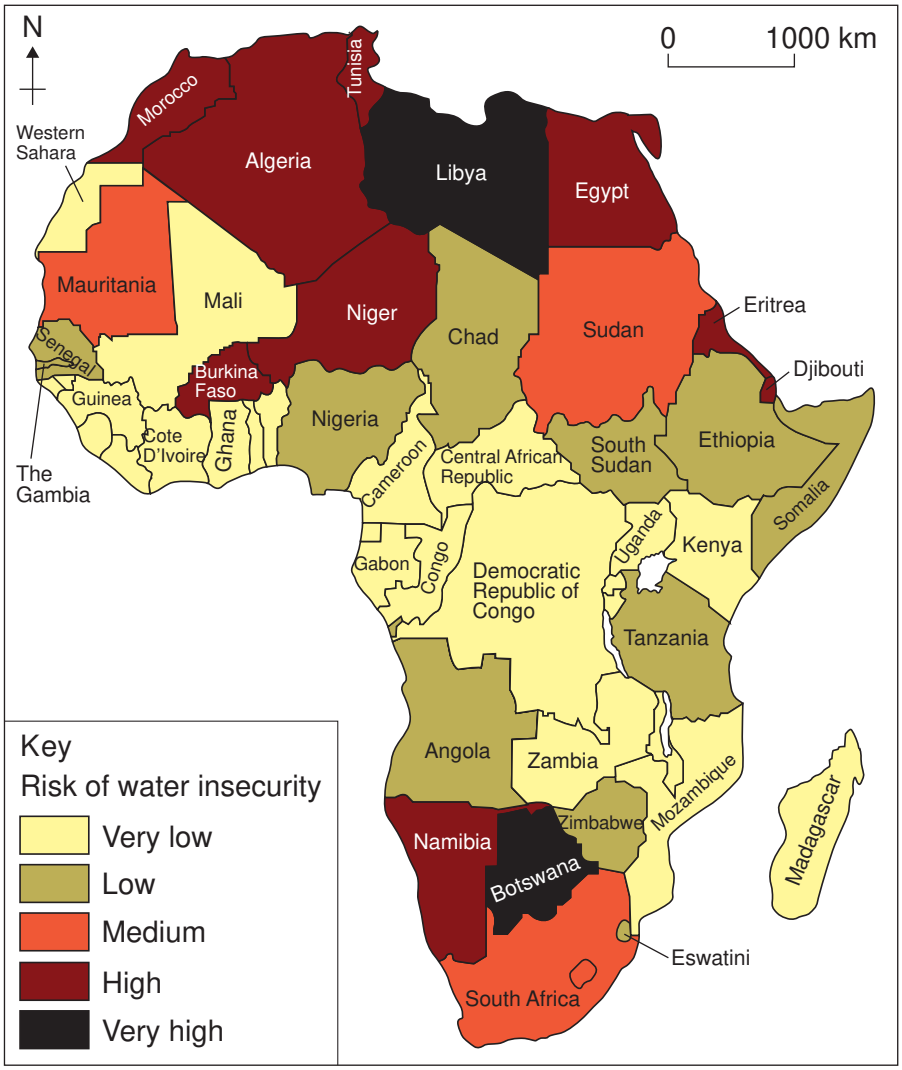
If you have answered Question 4, do not answer Question 5 or 6

Do not write outside the box

Question 5 Water

Study **Figure 14**, a map of Africa showing the risk of water insecurity in 2019.

Figure 14



Do not write outside the box

0 5 . 1 How many of the African countries shown in **Figure 14** had a high risk of water insecurity in 2019?

Shade **one** circle only.

A 8 ⬭

B 9 ⬭

C 10 ⬭

D 11 ⬭

What percentage of the 48 countries in Africa shown had a high risk of water insecurity in 2019?

Answer to **one** decimal place.

[2 marks]

_____

0 5 . 2 Describe the distribution of countries which had a very low risk of water insecurity shown in **Figure 14**.

[2 marks]

_____

_____

_____

_____

0 5 . 3 What is water insecurity?

[1 mark]

_____

_____

Question 5 continues on the next page

Do not write outside the box

0 5 . 4 Explain how limited infrastructure can affect water supply.

[2 marks]

Study **Figure 15a**, a photograph of a desalination plant in Dubai and **Figure 15b**, information about the costs of desalination.

Figure 15a

Figure 15b

Water source	Cost (US$) per acre foot*
Groundwater	90–160
Treating wastewater	1600–1700
Seawater desalination	2200–4300

*The amount of water needed to cover an acre (approximately a football pitch) in water 1 foot (30 cm) deep.

Do not write outside the box

0 5 . 5 To what extent can desalination and other strategies increase water supply?

Use **Figure 15a** and **Figure 15b** and your own knowledge.

[6 marks]

Extra space

13

End of Question 5

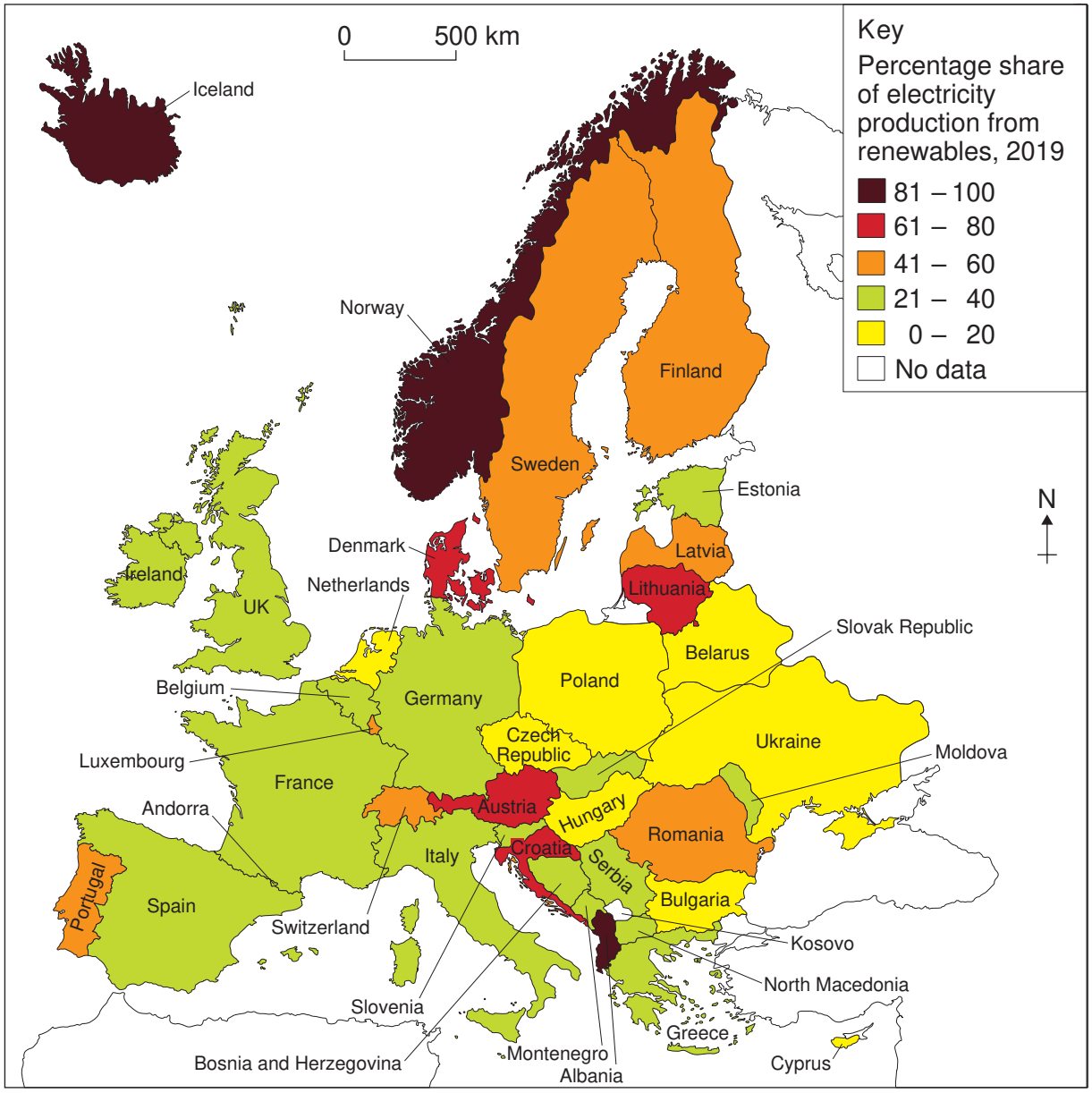
If you have answered Question 5, do not answer Question 4 or 6

Do not write outside the box

Question 6 Energy

Study **Figure 16**, a map of Europe (excluding Russia) showing the percentage of electricity produced from renewable sources in 2019.

Figure 16



Do not write outside the box

0 6 . 1 How many of the countries shown in **Figure 16** produced 41–60% of their electricity from renewable sources in 2019?

Shade **one** circle only.

A 6 ⬭

B 7 ⬭

C 8 ⬭

D 9 ⬭

What percentage of the 41 countries in Europe for which data is shown produced 41–60% of their electricity from renewable sources in 2019?

Answer to **one** decimal place.

[2 marks]

_____

0 6 . 2 Describe the distribution of countries which produced 0–20% of their electricity from renewable sources in 2019.

[2 marks]

_____

_____

_____

_____

0 6 . 3 What is energy insecurity?

[1 mark]

_____

_____

Question 6 continues on the next page

Do not write outside the box

0 6 . 4 Explain how political factors can affect energy supply.

[2 mark]

Study **Figure 17**, information about some renewable energy sources in the UK.

Figure 17

Figure 17 cannot be reproduced here due to third-party copyright restrictions

Do not write outside the box

0 6 . 5 To what extent can wind and tidal power and other strategies increase energy supply?

Use **Figure 17** and your own knowledge.

[6 marks]

Extra space

13

End of Question 6

If you have answered Question 6, do not answer Question 4 or 5

END OF QUESTIONS

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Do not write outside the box

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

Do not write outside the box

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

Copyright information

For confidentiality purposes, all acknowledgements of third-party copyright material are published in a separate booklet. This booklet is published after each live examination series and is available for free download from www.aqa.org.uk.

Map extracts and key reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright 2023. All rights reserved. Ordnance Survey Licence number 100041328.

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders may have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements. If you have any queries please contact the Copyright Team.

Copyright © 2023 AQA and its licensors. All rights reserved.