



CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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8291/12

October/November 2021

1 hour 30 minutes

You will need: Answer booklet/paper

- Section A: answer **all** questions. Write your answer to each question in the space provided on the question paper.
- Section B: answer **one** question. Write your answer on the separate answer booklet/paper provided.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.
- At the end of the examination, fasten all your work together. Do **not** use staples, paper clips or glue.

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [].

For Examiner's use	
Section A	
1	
2	
Section B	
Total	

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[Turn over

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 (a) Fig. 1.1 shows the variation in global temperatures compared to an average global temperature.

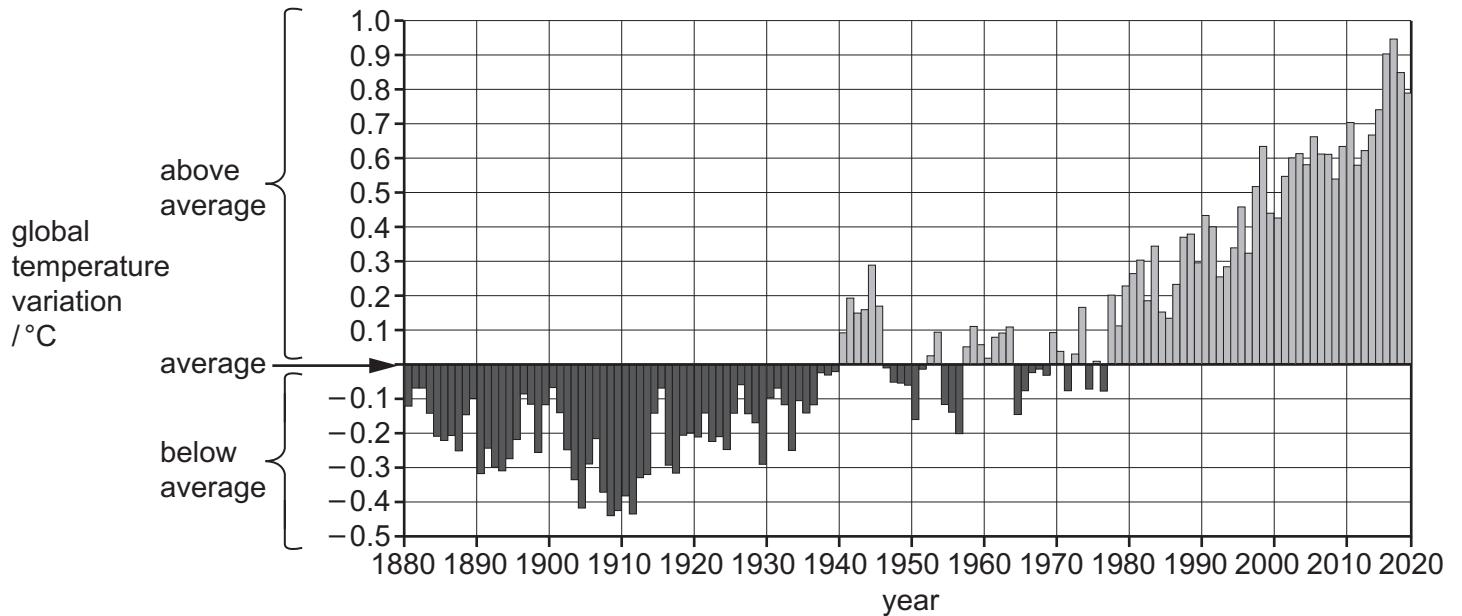


Fig. 1.1

- (i) Describe the trends shown in Fig. 1.1.

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..... [2]

- (ii) Explain how an increase in global atmospheric carbon dioxide levels could be responsible for the trends shown in Fig. 1.1.

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..... [4]

- (iii) The combustion of fossil fuels produces carbon dioxide.

Describe the environmental impacts of the **extraction** of fossil fuels.

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..... [4]

- (b) Targets were set for 28 European countries for the percentage of energy to be supplied from renewable resources by 2020.

Fig. 1.2 shows the percentage of energy supplied from renewable resources for some European countries in 2016.

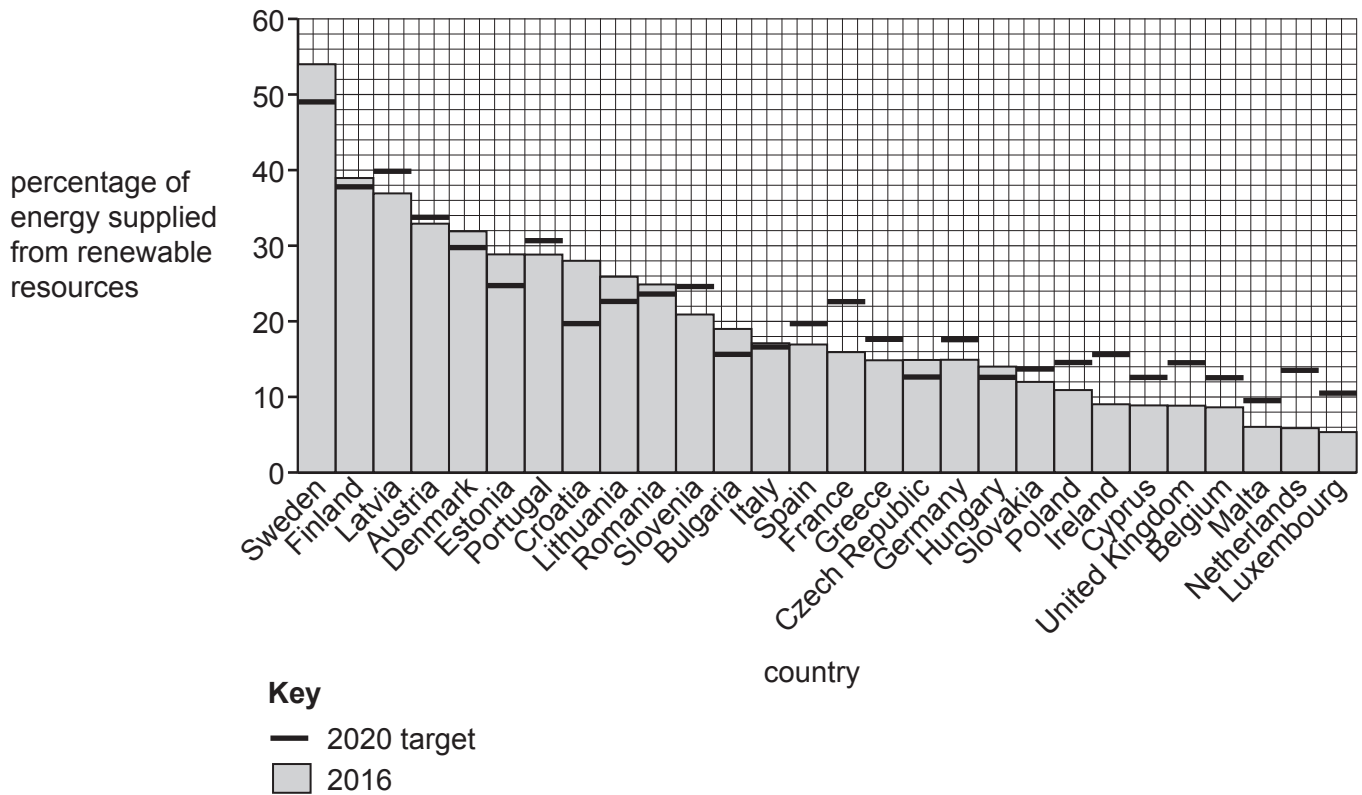


Fig. 1.2

- (i) Calculate the percentage of countries that reached their 2020 target for energy supplied from renewable resources by 2016.

..... % [1]

- (ii) Describe what is meant by renewable resources.

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..... [2]

(iii) Suggest reasons for the variation in targets set for each country shown in Fig. 1.2.

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..... [3]

(c) Nuclear energy can be used to generate electricity.

Suggest reasons why some countries do **not** invest in nuclear energy.

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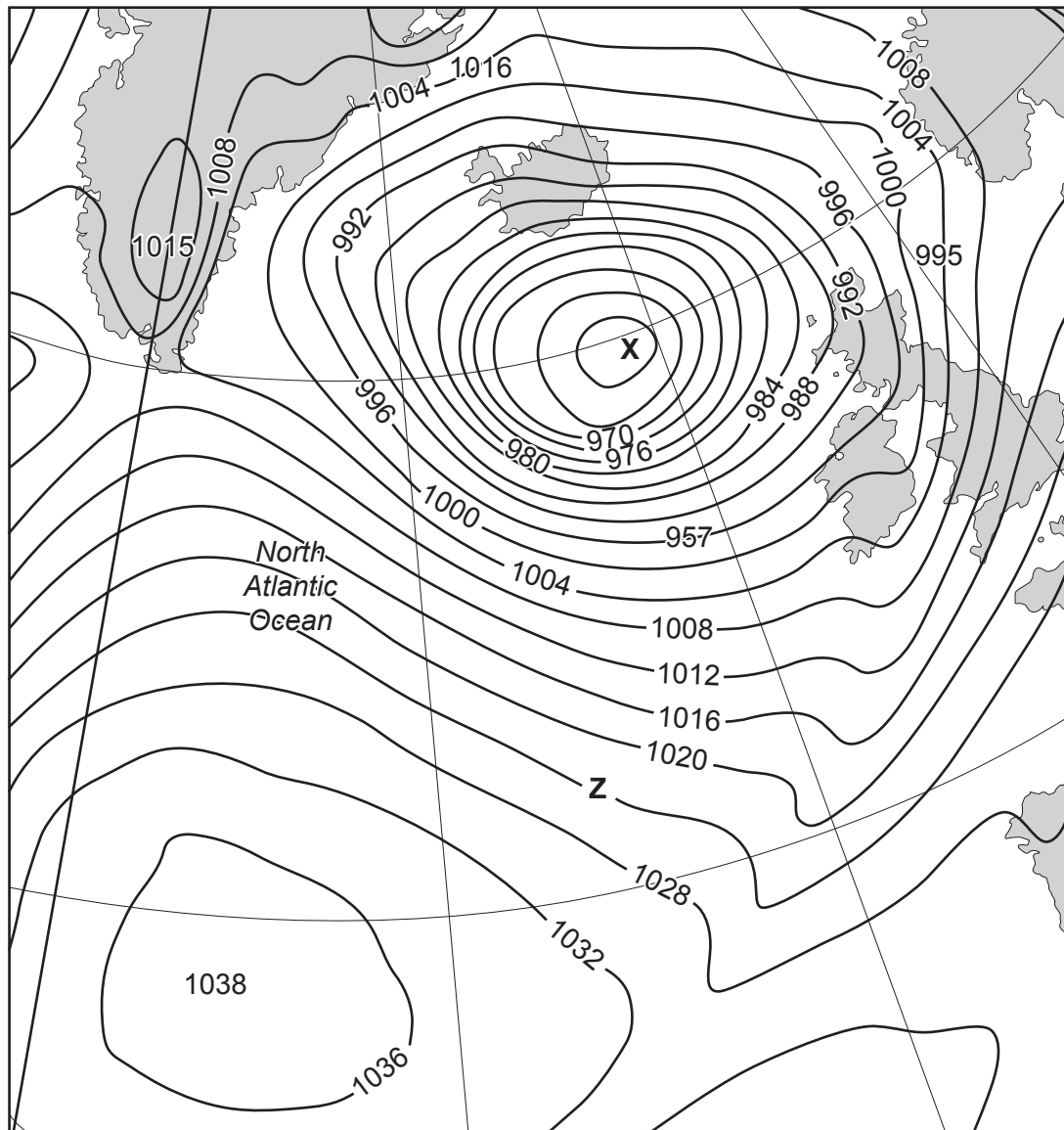
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..... [4]

[Total: 20]

- 2 (a) Fig. 2.1 is a weather chart for the North Atlantic.



Key

—1000— air pressure (millibars)

Fig. 2.1

- (i) Calculate the pressure at point **Z** shown in Fig. 2.1.

..... millibars [1]

- (ii) State the name of weather feature **X**.

.....

[1]

(iii) Describe methods used to forecast weather patterns.

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..... [4]

(iv) Describe the weather conditions associated with an anticyclone.

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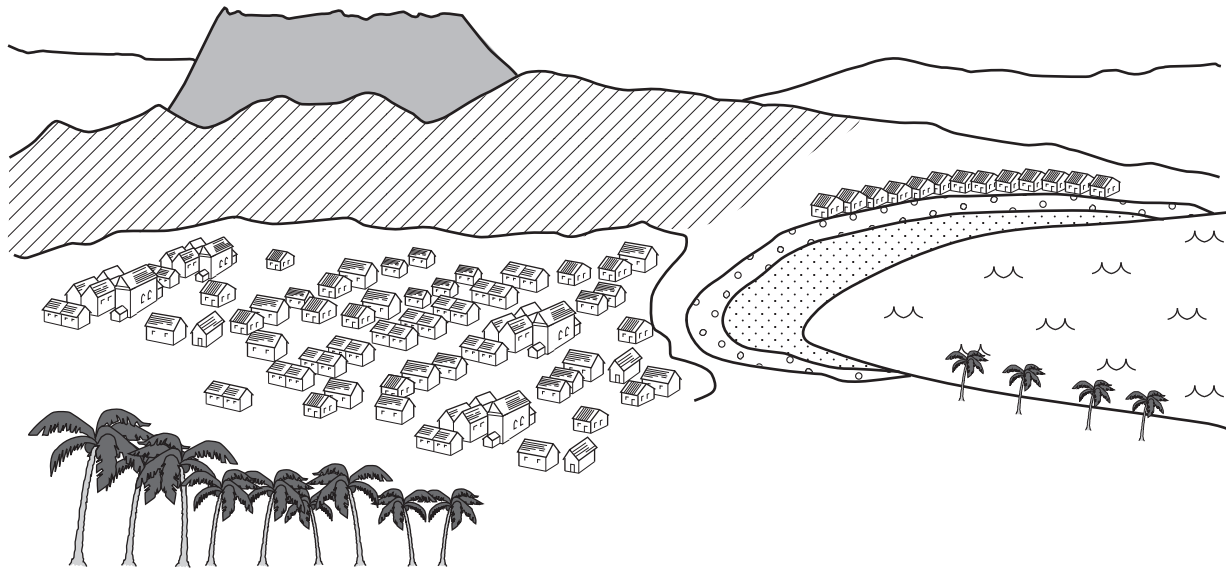
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..... [4]

(b) Fig. 2.2 is a field sketch of a small coastal settlement.



Key

-  sandy beach
-  low sand dunes
-  settlement
-  mountains
-  vegetated slopes
-  trees
-  sea

Fig. 2.2

(i) Describe the impacts of tropical cyclones on the area shown in Fig. 2.2.

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[4]

- (ii) Explain strategies to manage the impact of tropical cyclones on the area shown in Fig. 2.2.

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..... [6]

[Total: 20]

Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

- 3 Fig. 3.1 shows the area of land required to produce one tonne of protein for plant and animal based foods.

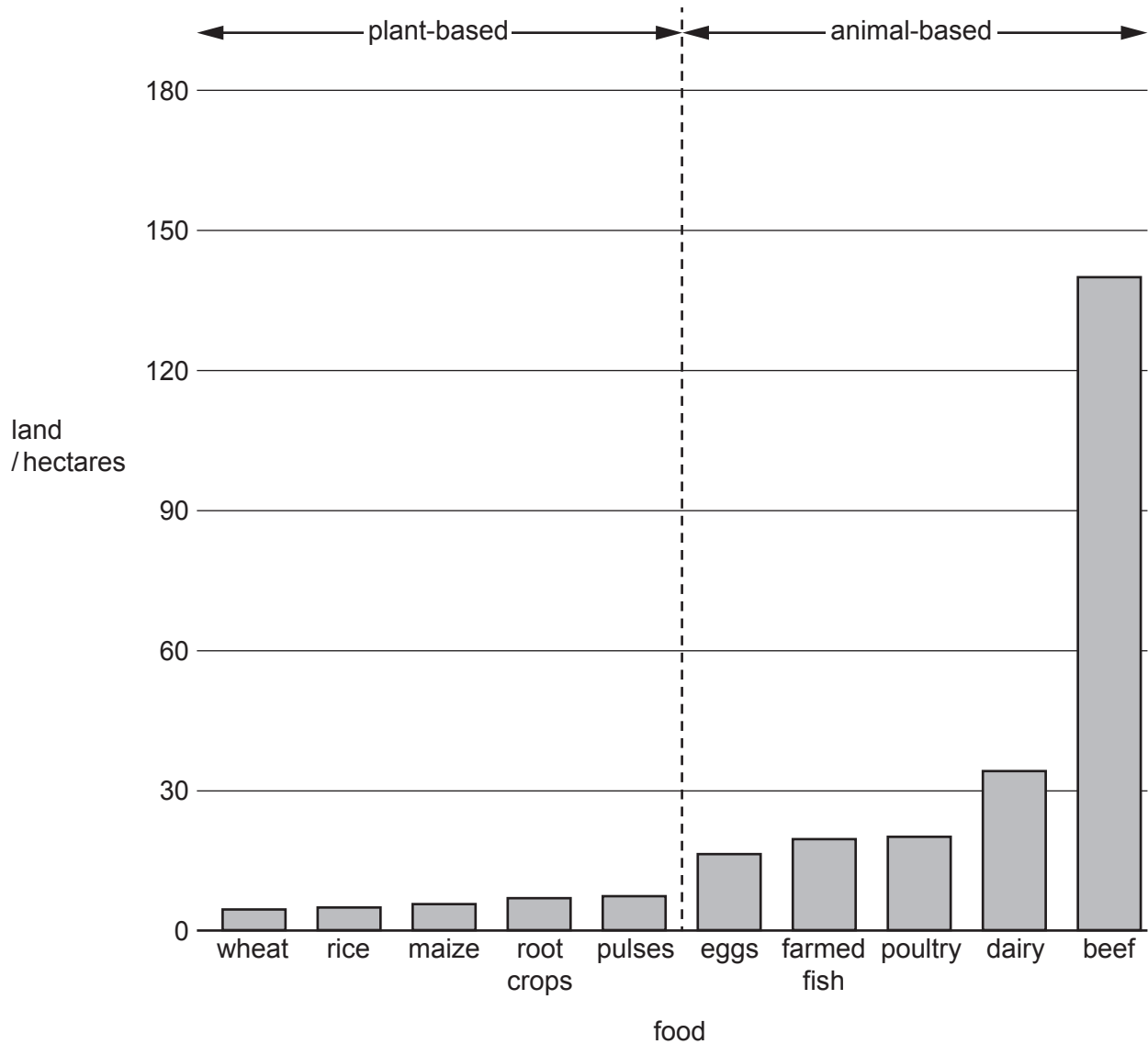
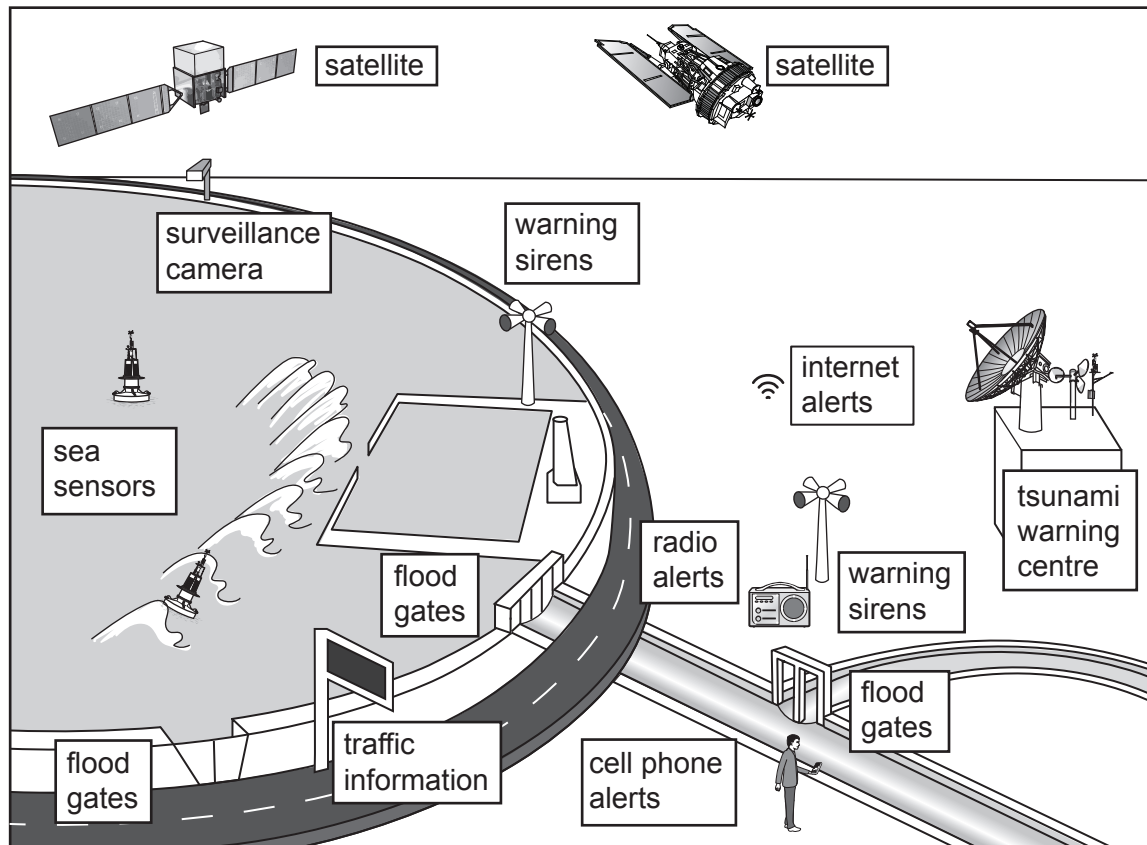


Fig. 3.1

- (a) Compare the environmental impact of an animal-based diet with that of a plant-based diet. Refer to Fig. 3.1. [10]
- (b) Evaluate strategies to reduce the impact of urban sprawl. Refer to a range of examples. [30]

[Total: 40]

4 Fig. 4.1 shows strategies used to reduce the impacts of a tsunami.



Key

-  harbour wall
-  road
-  drainage channel

Fig. 4.1

(a) Explain how the strategies shown in Fig. 4.1 reduce the impacts of a tsunami. [10]

(b) Discuss the extent to which the impacts of volcanoes and earthquakes are reduced by an improved understanding of plate tectonics. Refer to examples in your answer. [30]

[Total: 40]

- 5 Fig. 5.1 shows the emissions of nitrogen oxides for some countries in Europe from 1990–2016 by source of emission.

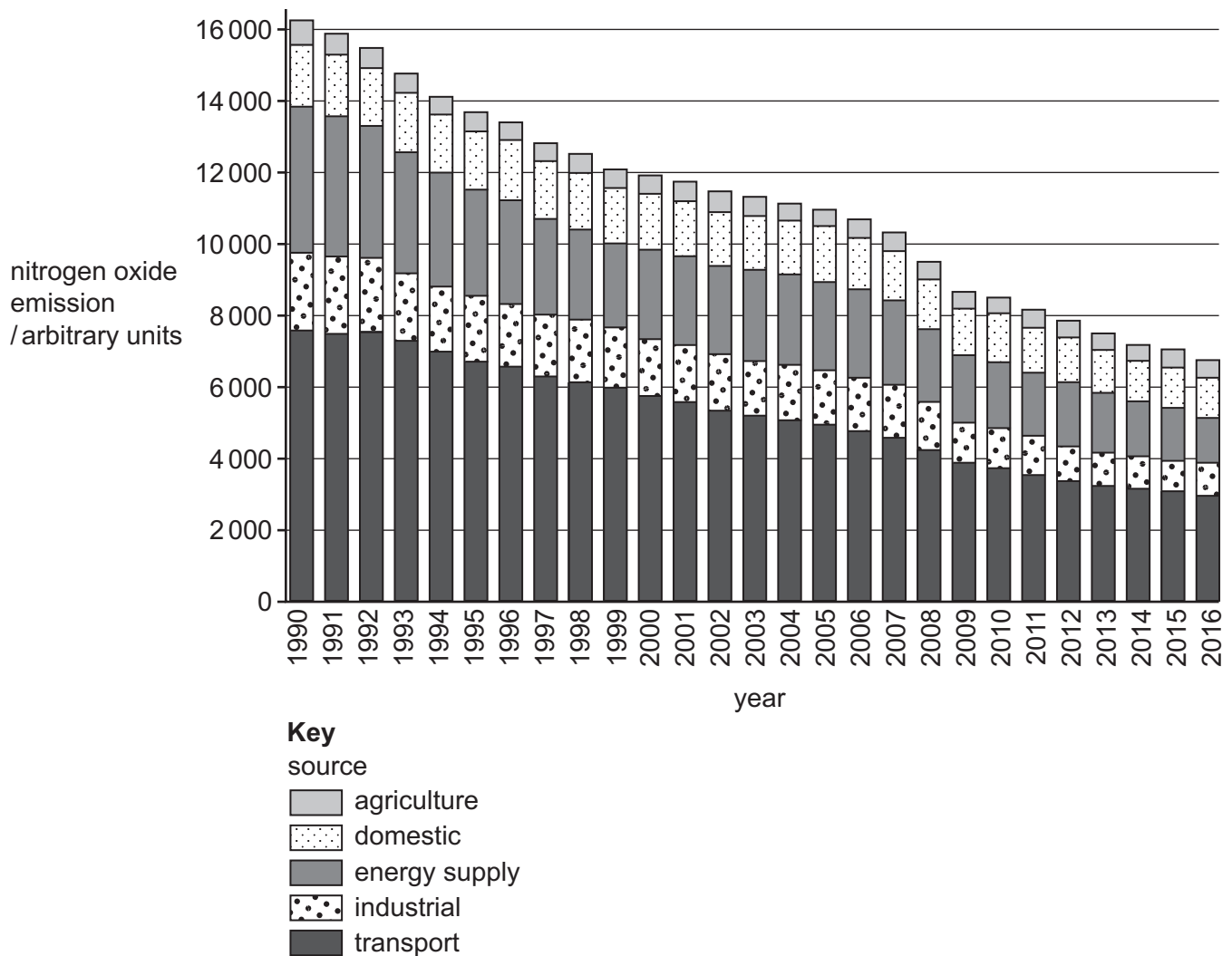


Fig. 5.1

- (a) Compare the extent to which the different sources shown in Fig. 5.1 have reduced their emissions of nitrogen oxides from 1990–2016. [10]

- (b) 'Reducing the causes of acid rain requires international agreement.'

Discuss the extent to which you agree with this statement. Refer to examples in your answer. [30]

[Total: 40]

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