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2254949502

ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 Management in Context **October/November 2025**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- 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.
- Write your answer to each question in the space provided.
- 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.

INFORMATION

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

This document has **24** pages. Any blank pages are indicated.

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world map showing the location of the Netherlands



map of the Netherlands

Key

- ★ capital city
- international boundary
- Afsluitdijk dam
- Lake Markermeer



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Area of the Netherlands: 41 543 km^2

Population of the Netherlands: 17.5 million (in 2023)

Children per woman: 1.77 (in 2023)

Life expectancy: 82.4 years

Currency: Euro (0.92 EUR = 1USD in 2023)

Language: Dutch and regional languages

Climate of the Netherlands: cool summers and mild winters

Terrain of the Netherlands: low flat land, hills in the southeast, 17% of the land has been reclaimed from the North Sea

Main economic activities of the Netherlands: production of chemicals, oil refining, machinery and agricultural products

The capital city, Amsterdam, is the largest city in the Netherlands. More than 93% of the population is urban. The country is a MEDC and one of the largest exporters of food.

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1 **(a)** The population of Amsterdam in 2023 was 1 174 025.

(i) Calculate the percentage of the population of the Netherlands that lived in Amsterdam in 2023.

.....% [1]

(ii) The area of Amsterdam is 219.3 km^2.

Calculate the population density of Amsterdam in 2023.

Use this formula.

$$\text{population density} = \frac{\text{number of people}}{\text{area of land}}$$

Include a unit in your answer.

population density = ... unit ..... [2]

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(b) The graph shows migration data for the Netherlands.

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(i) Determine the number of years immigration was less than emigration.

years = ... [1]

(ii) Describe the trend for migration balance.

.....

.....

.....

..... [2]

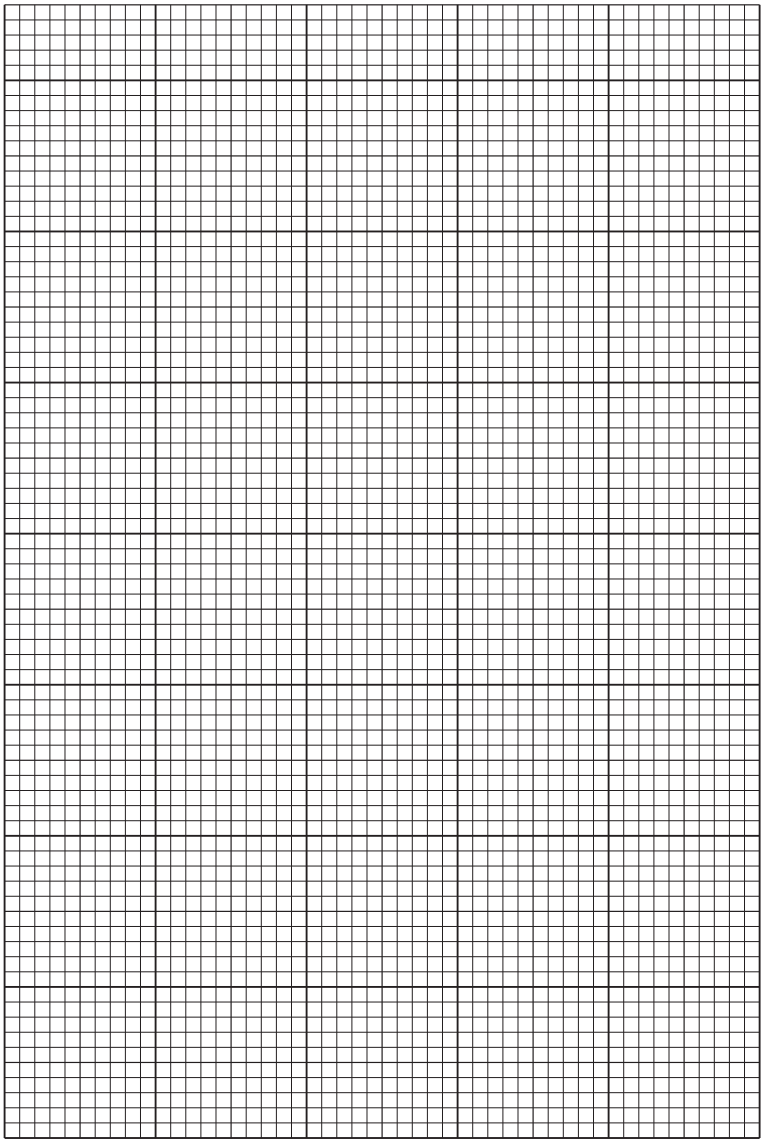
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(c) Availability of jobs is one reason for migration.

(i) The table shows data for the number of people in five different employment sectors in the Netherlands.

employment sector	number of people
construction	340 000
education	500 000
healthcare	1 400 000
manufacturing	760 000
transport	400 000

Plot the data as a bar chart.



[4]

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(ii) State **two** reasons for migration other than employment.

1 .....

2 .....

[2]

(d) State what is meant by urbanisation.

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..... [1]

(e) Explain why removing vegetation increases the risk of flooding in urban areas.

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..... [3]

[Total: 16]

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2 Flooding is an environmental threat to the Netherlands.

(a) Flooding can cause loss of life.

(i) Explain how flooding increases the risk of water-related diseases.

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..... [3]

(ii) State **three** impacts of flooding other than loss of human life and water-related diseases.

1 .....

2 .....

3 .....

[3]

(iii) Complete the sentences about a storm hydrograph.

Use terms from the list. Each term can be used once, more than once or not at all.

condensation **evaporation** **ground water flow**

precipitation **through-flow**

g/s **g/min** **m^3/s** **m^3/min**

The discharge of a river is the volume of water passing a certain point every second. This is measured in ..... .

A storm hydrograph shows how the discharge of a river can change over time in response to ..... .

Different flows of water are shown on a storm hydrograph.

The water that flows through the soil is called ..... .

The water that flows through rock is called ..... .

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(b) The map shows the height of the land in the Netherlands compared to sea level.

Key

land below sea level

land 0 to 7 m above sea level

land greater than 7 m above sea level

international boundary

N



Describe what the map shows about the height of land in the Netherlands.

.....

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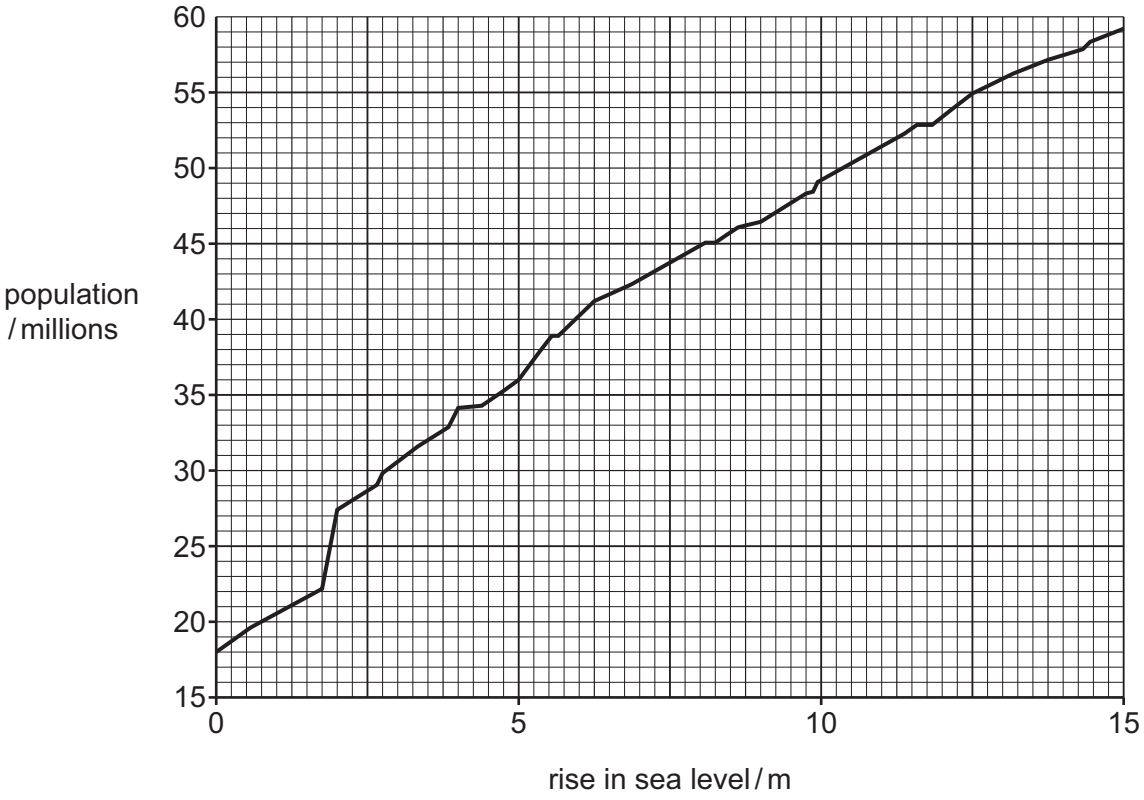
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(c) The graph shows a prediction for the population of northern Europe who will be affected by flooding if there is a rise in sea level.



Determine the number of people affected by flooding if the sea level rises by 5 m.

..... [1]

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(d) The photograph shows the Afsluitdijk dam.



Afsluitdijk dam was built in 1932. The dam is a sea defence that encloses a salt-water inlet of the North Sea. The dam is 7.25 m above sea level, 90 m wide and 32 km long. It protects the land from flooding.

The dam needs to be improved to make it stronger and higher.

Suggest **two** reasons the dam needs to be made stronger and higher.

1 .....

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2 .....

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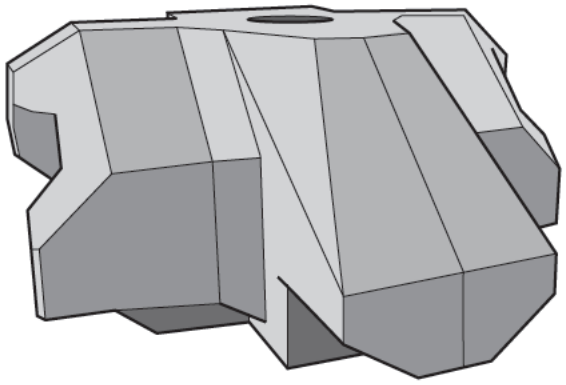
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(e) The dam will be reinforced using 75 000 concrete blocks.

The diagram shows one of the blocks.



(i) Each concrete block has a mass of 6 500 kg.

Calculate the total mass of blocks used to reinforce the Afsluitdijk dam.

..... kg [1]

(ii) The main ingredient of concrete is lime.

Calcium carbonate is heated to a very high temperature. This produces lime and carbon dioxide.

The blocks used to reinforce the Afsluitdijk dam use 35% less concrete than standard concrete blocks.

Suggest **three** reasons why using less concrete is a benefit.

1 .....

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2 .....

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3 .....

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[3]

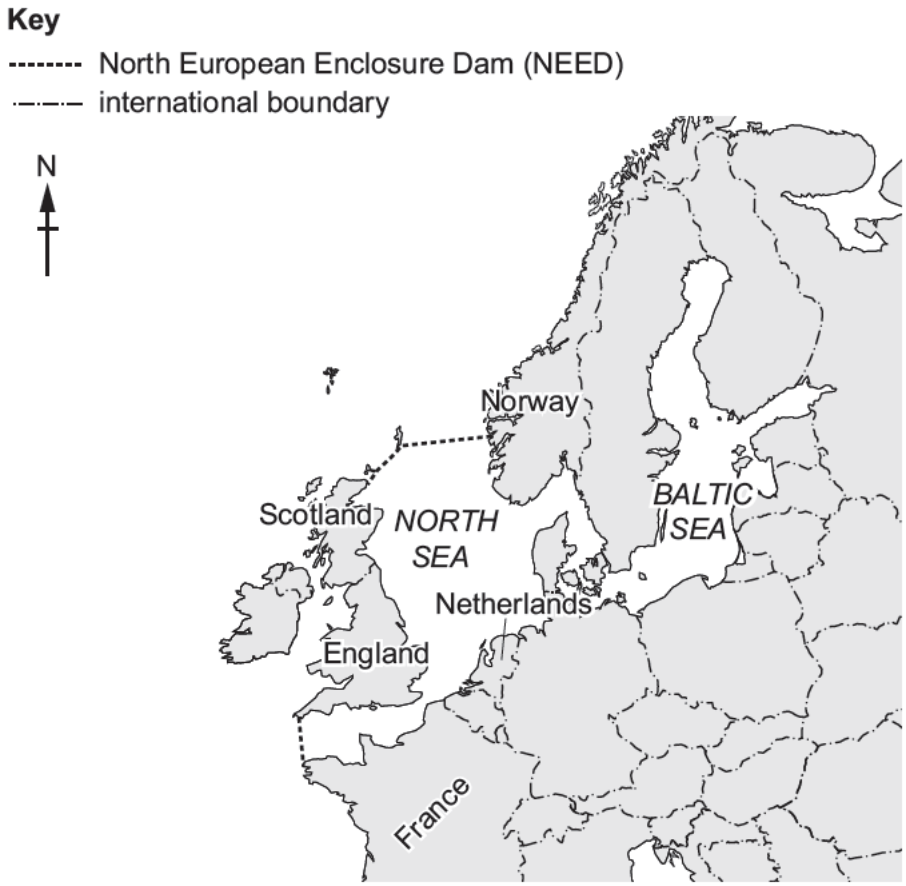
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(f) One solution to the threat of flooding is construction of the North European Enclosure Dam (NEED).

NEED is two giant dams that would enclose the North Sea.

The map shows the suggested locations of the two dams.



The dams will be built where the North Sea is less than 330 m deep.

The dam from Scotland to Norway is 480 km long. The dam from England to France is 160 km long. The North Sea and the Baltic Sea will eventually become a huge freshwater lake with more than 25 rivers flowing into it.

NEED is predicted to cost 500 billion Euros.

Many people are against the construction of NEED.

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(i) Suggest reasons why people are against the construction of NEED.

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..... [4]

(ii) Suggest why international cooperation is necessary for NEED to be constructed.

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..... [1]

[Total: 25]

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3 Lake Markermeer is one of the largest freshwater lakes in Europe.

The photograph shows the Marker Wadden, which is a group of five artificial islands in the lake.



(a) Clay, sand and silt from the bottom of the lake was used to make these islands.

Suggest **two** benefits of using clay, sand and silt from the bottom of the lake to make these islands.

1 .....

.....

2 .....

.....

[2]

(b) Nature reserves increase biodiversity.

The islands are nature reserves. People are only allowed to visit one of the islands.

(i) Suggest **two** reasons why **not** allowing people to visit the islands increases biodiversity.

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2 .....

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[2]

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(ii) Describe how zoos can also increase biodiversity.

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..... [3]

(iii) Suggest **one** reason why some people are against zoos.

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..... [1]

(iv) Extractive reserves are a strategy to increase biodiversity.

Describe what is meant by an extractive reserve.

.....

.....

.....

..... [2]

(c) People are allowed to visit one of the islands.

Electricity on this island is generated by solar and wind power.

Explain how wind power is used to generate electricity.

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..... [3]

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(d) More than 200 breeding pairs of pied avocet are found on the islands.

Pied avocets are about 45 cm tall.

The photograph shows a pied avocet.



A scientist wants to investigate the population of pied avocets on the islands.

The scientist uses this method.

- Take photographs from the air (aerial photographs) of the islands on one day in June.
- Divide the islands into grids of 10 m × 10 m squares.
- Select squares systematically.
- Count the pied avocets in the squares that were systematically selected.

(i) Describe how the scientist can systematically select squares to investigate the population of pied avocets.

.....

..... [1]

(ii) Suggest **three** advantages of using aerial photographs instead of visiting the islands to count the number of pied avocets.

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[3]

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(iii) Suggest **one** improvement to the scientist's method.

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..... [1]

(iv) Describe how the scientist estimates the **total** number of pied avocets on the islands.

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..... [2]

(v) Explain why pitfall traps are **not** used to sample pied avocets.

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..... [2]

[Total: 22]

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4 **(a)** The table shows the percentage of different energy resources used to generate electricity in the Netherlands.

energy resource	percentage of electricity generated
gas	47
wind	15
coal	14
solar	10
biomass	8
other	6

(i) Nuclear power is one of the energy resources in the 'other' group in the table.

State **three** benefits of nuclear power.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(ii) State **two** limitations of nuclear power.

1 .....

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2 .....

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[2]

(iii) Suggest **two** energy resources in the 'other' group. Do **not** include nuclear.

1 .....

2 .....

[2]

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(iv) The Netherlands plans a 55% reduction in carbon emissions by 2030.

Explain why a 55% reduction in carbon emissions will be difficult to achieve.

Use information in the table to support your answer.

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(b) The bar chart shows the electricity exported by 6 countries in one year.

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(i) In the same year, the electricity imported to the Netherlands was 15 billion kWh.

Determine the ratio of electricity imported to electricity exported in the Netherlands.

Give your answer as the simplest whole number ratio.

imported : exported = ... : ..... [1]

(ii) Suggest **one** reason why countries export electricity.

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..... [1]

[Total: 12]

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5 Many people in the Netherlands use bicycles to travel to work.

(a) The photograph shows a road system in Amsterdam.



Suggest **two** reasons why this road system encourages the use of bicycles.

1 .....

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2 .....

.....

[2]

(b) The use of bicycles reduces the use of cars in towns.

Suggest **three** other transport policies that encourage people to reduce the use of cars.

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[3]

[Total: 5]

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