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ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 Management in Context **May/June 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 **20** pages. Any blank pages are indicated.

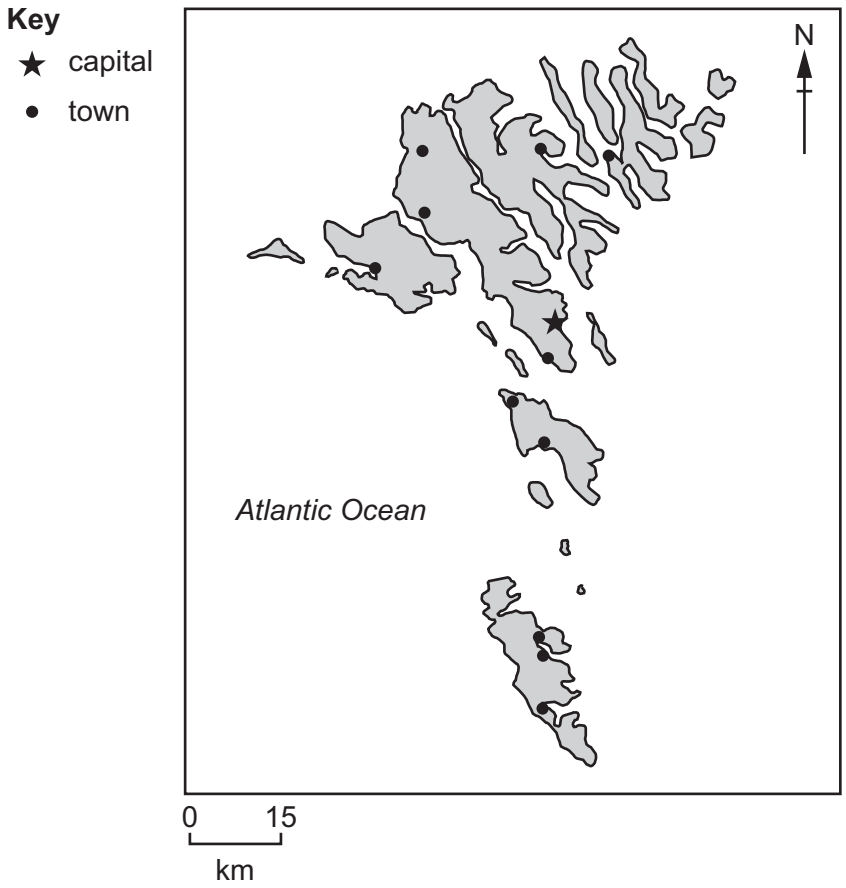
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world map showing the location of the Faroe Islands



map of the Faroe Islands



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Area of the Faroe Islands: 1393 km^2

Population of the Faroe Islands: 52 269 (in 2022)

Children per woman: 2.29 (in 2022)

Life expectancy: 81.3 years

Currency: Danish krone (6.5 DKK = 1.00 USD)

Language: Faroese, Danish

Climate of the Faroe Islands: mild winters, cool summers; cloudy, wet and windy

Terrain of the Faroe Islands: rocky, low hills, cliffs along the coast

Main economic activities of the Faroe Islands: fishing and farming of marine species, tourism, small ship repair

The Faroe Islands is a collection of islands. Many of the islands have a very low population. 40% of the total population lives in the capital.

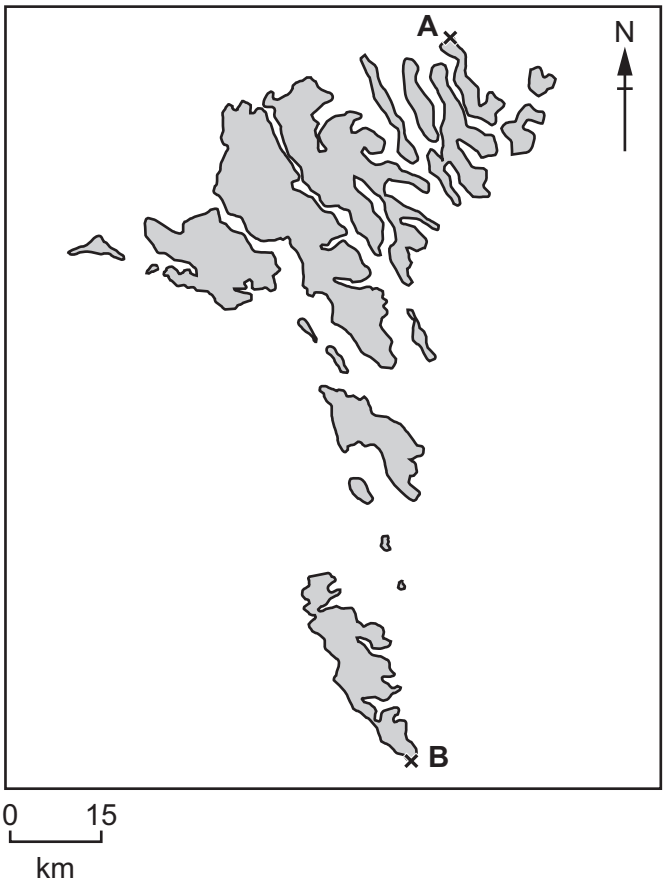
The Faroe Islands' economy depends on fishing.

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1 (a) (i) Determine the length of the Faroe Islands between the crosses labelled **A** and **B**.



..... km [1]

(ii) Calculate the population density of the Faroe Islands.

..... people / km^2 [1]

(iii) Suggest **two** reasons why a large proportion of the population lives in the capital.

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[2]

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(b) Fishing is the most important industry in the Faroe Islands.

Faroe Bank is a fishing area with a shallow sea depth.

(i) Suggest **one** reason why the shallow sea depth on Faroe Bank makes it easier to fish.

.....

..... [1]

(ii) Cod are fish caught around the Faroe Islands.

The table shows the mean mass of 3-year-old cod from different fishing locations.

fishing location	mean mass of 3-year-old cod / kg
East Iceland	0.9
Faroe Bank	4.2
Faroe Plateau	1.7
South Iceland	1.9
West Greenland	0.7

Calculate the range for the data shown in the table.

..... kg [1]

(iii) State **three** abiotic factors that affect the growth rate of fish.

1 .....

2 .....

3 .....

[3]

(iv) In 2003, 6289 tonnes of cod were caught on the Faroe Bank.

In 2007, 477 tonnes of cod were caught.

Calculate the percentage decrease in the catch of cod between 2003 and 2007.

..... % [2]

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(v) Scientists state that cod on the Faroe Bank have been overfished.

Explain how overfishing reduces the population of cod.

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(vi) Overfishing increases the quantity of bycatch.

Define the term bycatch.

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(c) In 1992, scientists recorded a large reduction in the catch of cod.

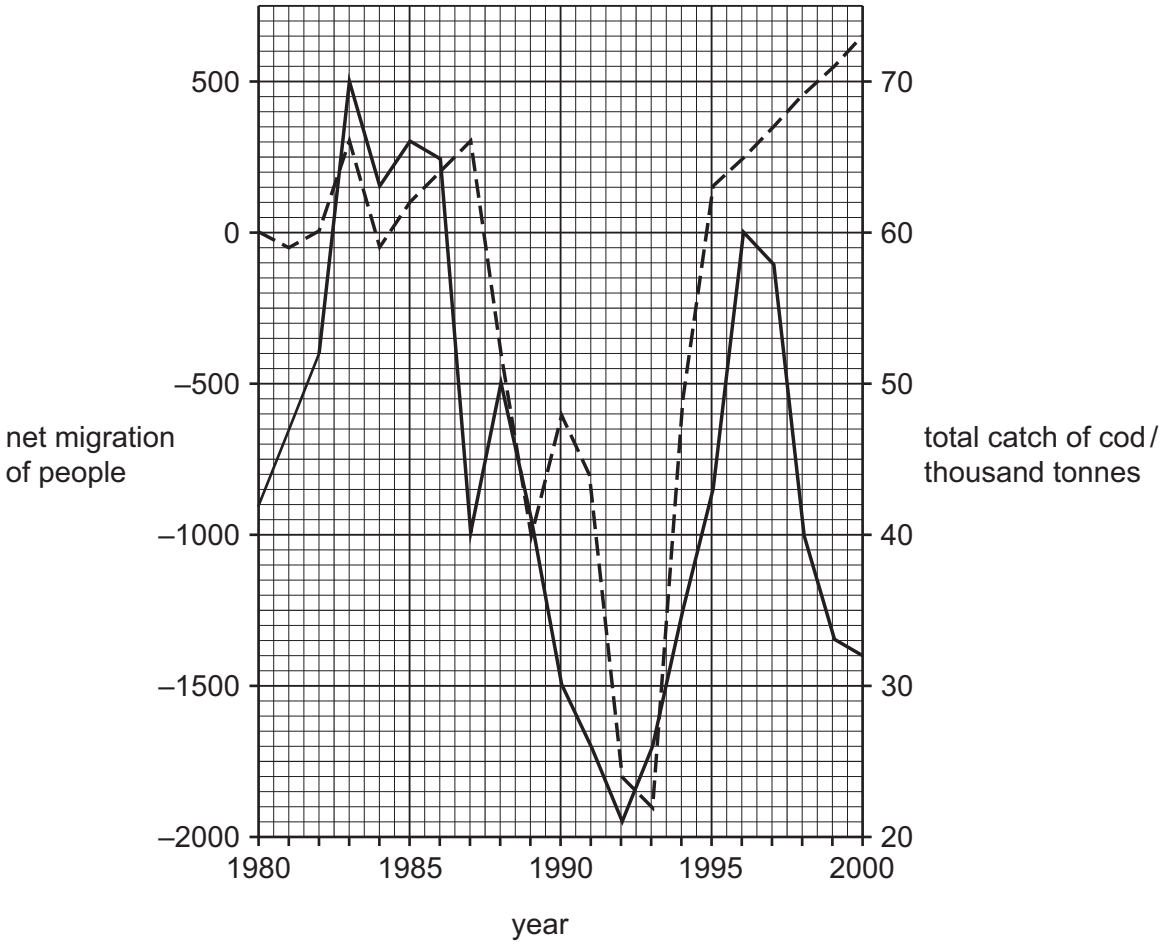
The graph shows information on the total catch of cod and the net migration of people in the Faroe Islands.

Net migration is the difference between the number of people that move into and move out of the Faroe Islands.

Key

——— total catch of cod

- - - - net migration of people



(i) State the year when the total catch of cod was greatest.

..... [1]

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(ii) Describe the relationship between the total catch of cod and the net migration of people shown in the graph between 1980 and 1993.

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..... [3]

(iii) Explain why a change in cod population changes the net migration of people in the Faroe Islands.

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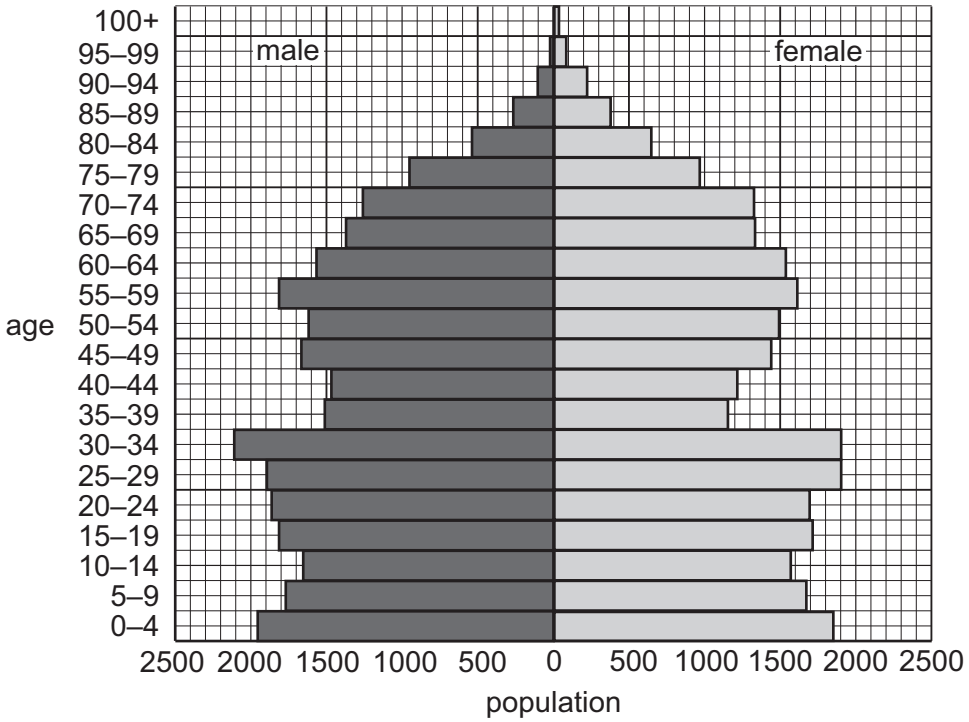
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(iv) The diagram shows the population pyramid for the Faroe Islands in 2021.



Calculate the number of people in the Faroe Islands aged between 30 and 34 years.

..... [1]

(v) The Faroe Islands are a more economically developed country (MEDC).

State **two** ways the age distribution of a less economically developed country (LEDC) is different from the Faroe Islands.

Use the population pyramid to support your answer.

1 .....

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[2]

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(d) The photograph shows a farm for marine species in the Faroe Islands. Fish are kept in cages.



This activity has economic and environmental impacts.

Complete the table to suggest **one** positive and **one** negative economic and environmental impact.

	positive impact	negative impact
economic	....	....
environmental	....	....

[4]

[Total: 27]

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2 The photograph shows pilot whales in the sea around the Faroe Islands.



(a) The prey of pilot whales is jellyfish. Jellyfish feed on phytoplankton. Pilot whales are eaten by orca.

(i) Construct a food chain for these organisms.

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(ii) The source of energy for the pilot whale is dependent on chlorophyll.

Explain this statement.

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..... [4]

(iii) Scientists estimate that the world population of pilot whales is between 430 000 and 1 390 000.

Suggest **two** reasons why there are large variations in the estimates from different scientists.

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[2]

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(iv) A student determines the population of pilot whales around the Faroe Islands over 7 weeks.

The table shows the data.

week	population
1	121 000
2	2 000
3	134 000
4	147 000
5	79 000
6	85 000
7	78 000

The data for one of the weeks is anomalous.

Identify which week is anomalous. Give a reason for your choice.

week .....

reason .....

.....

[1]

(v) Describe a method to estimate the total population of pilot whales around the Faroe Islands.

Include in your method:

- how to select an area to sample
- how the population will be counted in the sample area
- how the total population will be estimated.

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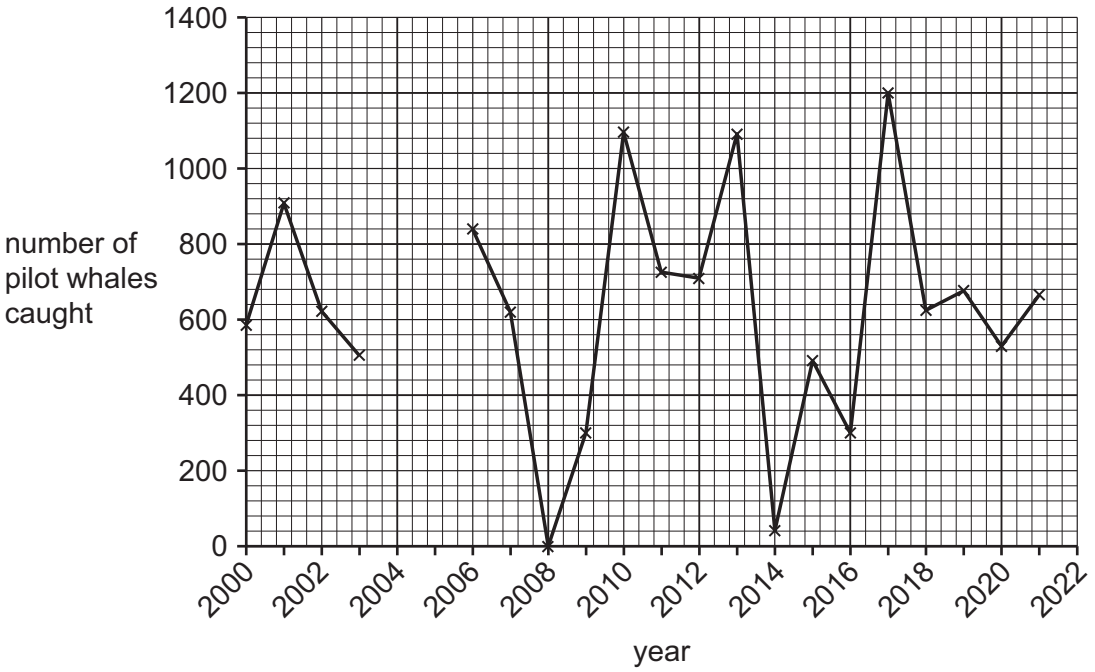
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..... [4]

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(b) Pilot whales have been hunted for food for over 1000 years.

The graph shows the number of pilot whales caught around the Faroe Islands between 2000 and 2021.



(i) Complete the line graph using the data in this table.

year	number of pilot whales caught
2004	1000
2005	300

[2]

(ii) Suggest **three** reasons why the government of the Faroe Islands allows pilot whales to be hunted.

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[3]

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(iii) Pilot whales contain hazardous levels of toxic chemicals in their bodies.

Explain how toxic chemicals bioaccumulate in pilot whales.

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..... [3]

(c) Many people want to conserve pilot whales.

(i) Explain how ecotourism can help conserve pilot whales.

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..... [4]

(ii) State **one** strategy to conserve pilot whales other than ecotourism or banning hunting.

..... [1]

[Total: 26]

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3 **(a)** The table shows total electricity generation and consumption in the Faroe Islands in 2020.

total electricity generation / million kWh	307.0
total electricity consumption / million kWh	285.5

(i) Calculate the difference between total electricity generation and consumption in the Faroe Islands in 2020. Include the unit in your answer.

..... unit ..... [1]

(ii) Suggest **one** benefit to the Faroe Islands of generating more electricity than is consumed.

.....

..... [1]

(iii) Electricity used per person in the USA is twice that of the energy used per person in the Faroe Islands.

Suggest **three** reasons why the use of electricity per person in the Faroe Islands is less than in the USA.

1 .....

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2 .....

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3 .....

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[3]

(b) The government of the Faroe Islands plans to generate all electricity from renewable resources by 2030.

The table shows the energy resources used for generating electricity in the Faroe Islands in 2020.

energy resource	percentage of electricity supply
fossil fuel	59
nuclear	0
solar	0
wind	15
hydro-electricity	26
tidal and wave	0

(i) Name **two** renewable energy resources **not** listed in the table.

1 .....

2 .....

[2]

(ii) State **three** types of fossil fuel.

1 .....

2 .....

3 .....

[3]

(iii) Suggest **two** reasons why the government of the Faroe Islands plans to generate all electricity by renewable resources by 2030.

1 .....

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2 .....

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[2]

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(iv) The government of the Faroe Islands plans to meet its target by developing wave and tidal power and **not** solar power.

Suggest **two** reasons for this decision.

1 .....

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2 .....

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[2]

(v) The photograph shows wind turbines in the Faroe Islands.



Suggest **two** reasons why this location is suitable for wind turbines.

1 .....

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2 .....

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[2]

(vi) Suggest **two** risks to the marine ecosystem of locating wind turbines in the ocean.

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[2]

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(vii) Describe how a wind turbine is used to generate electricity.

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..... [3]

(c) There are reserves of fossil fuels under the ocean near the Faroe Islands.

State **two** economic reasons why these reserves of fossil fuels have **not** been extracted.

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2 .....

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[2]

(d) Explain how fossil fuels contribute to the enhanced greenhouse effect.

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..... [4]

[Total: 27]

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