



Cambridge International AS Level

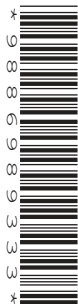
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ENVIRONMENTAL MANAGEMENT

8291/21

Paper 2 Hydrosphere and Biosphere

May/June 2020

1 hour 30 minutes

You must answer **Section A** on the question paper and **Section B** on the answer booklet/paper you have been given.

You will need: Answer booklet/paper

INSTRUCTIONS

- 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.

INFORMATION

- 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 | |

This document has **12** pages. Blank pages are indicated.

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 (a) Fig. 1.1 shows the relationships between nutrient flows and stores for three biomes, **P**, **Q** and **R**.

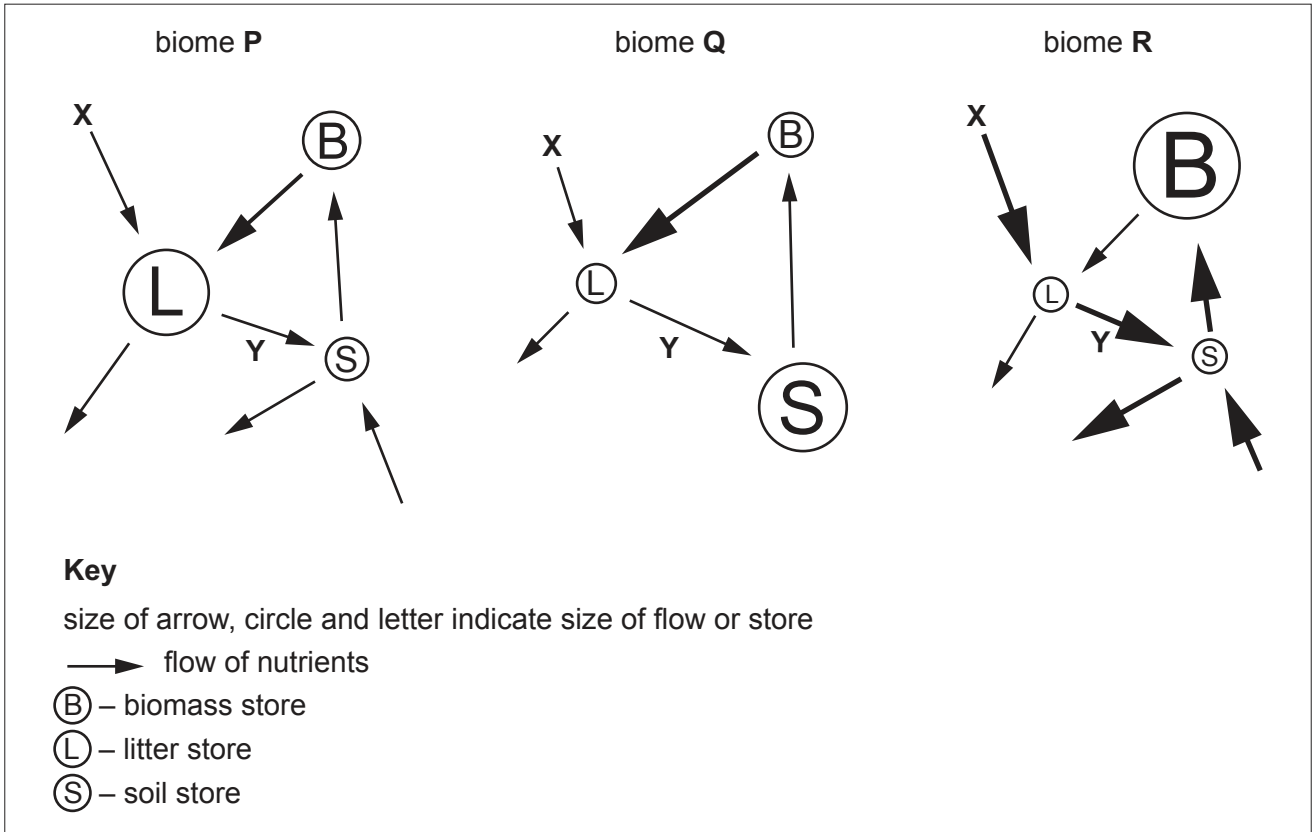


Fig. 1.1

- (i) Identify the biomes in Fig. 1.1 using the terms listed.

desert temperate forest tropical rainforest

biome **P**

biome **Q**

biome **R**

[2]

- (ii) State the process labelled **X** in Fig. 1.1.

..... [1]

- (iii) State the process labelled **Y** in Fig. 1.1.

..... [1]

(iv) Describe how deforestation affects nutrient flows and stores in a tropical rainforest.

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..... [4]

(b) Fig. 1.2 shows the distribution of savannah (tropical grassland).

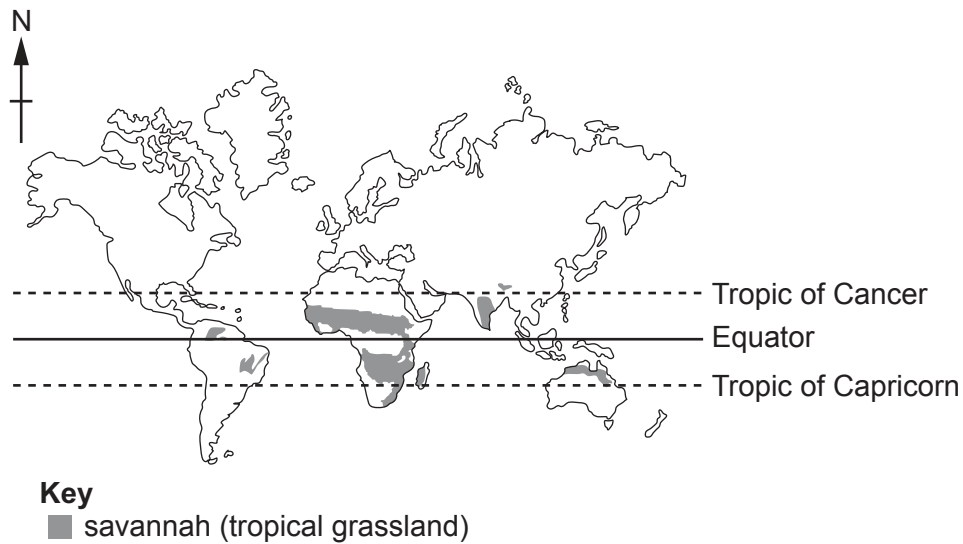


Fig. 1.2

(i) Describe the distribution of savannah (tropical grassland) shown in Fig. 1.2.

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..... [2]

(ii) State the two main abiotic factors which lead to the distribution shown in Fig. 1.2.

1

2 [2]

(iii) Wildfires are needed to help maintain the stability of the savannah (tropical grassland) ecosystem.

Suggest **two** advantages and **two** disadvantages of wildfires.

advantages

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disadvantages

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..... [4]

(iv) Explain **two** strategies, other than the use of fire, which manage and conserve the biodiversity of savannah (tropical grassland).

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..... [4]

[Total: 20]

- 2 (a) Fig. 2.1 is a graph showing the demand for water by sector in China for 2005, 2015 and predicted demand for 2030.

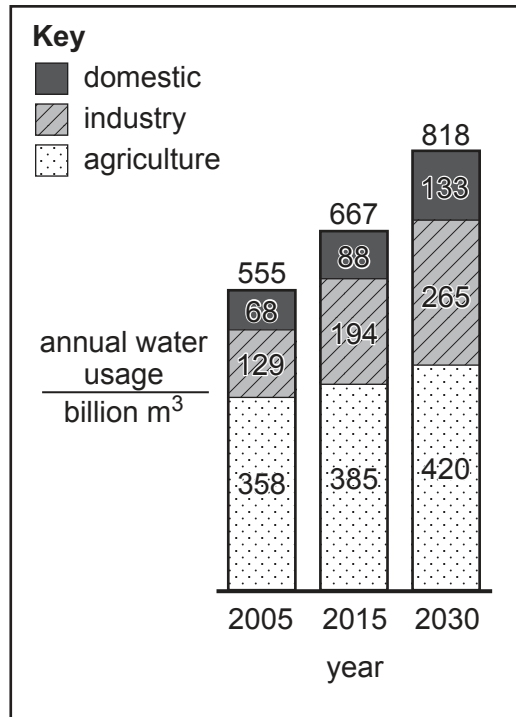


Fig. 2.1

- (i) State the sector shown in Fig. 2.1 which is predicted to have the largest increase in demand for water from 2005 to 2030.

..... [1]

- (ii) Suggest reasons for the increase in demand for water by the sector stated in (a)(i).

.....

 [2]

(iii) Describe **four** ways China might manage the increase in demand for water shown in Fig. 2.1.

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..... [4]

(b) Fig. 2.3 is an extract from an English-language webpage published in China.



Fig. 2.3

(i) Suggest **one** reason for the accelerated melting of the glaciers described in Fig. 2.3.

Explain your answer.

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..... [2]

(ii) Glaciers and ice caps store more than 68% of the Earth's freshwater.

Describe **three** impacts of glaciers melting.

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..... [3]

Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

- 3 Fig. 3.1 shows the Great Limpopo Trans-Frontier Park and Conservation Area, a joint project between Mozambique, South Africa and Zimbabwe in the south of Africa.

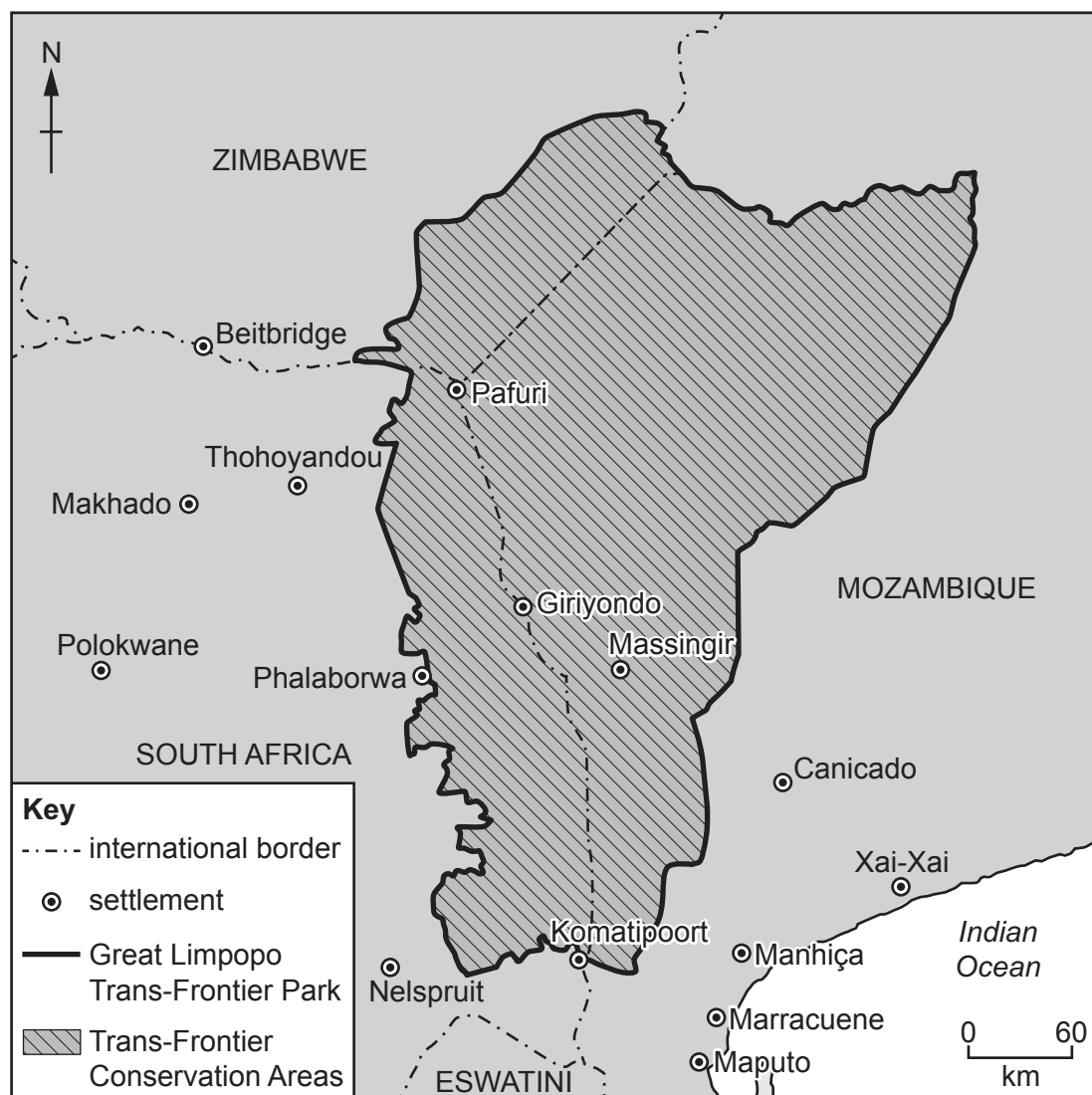


Fig. 3.1

- (a) Suggest advantages and disadvantages of international cooperation in the management of conservation projects, such as the Great Limpopo Trans-Frontier Park and Conservation Area. [10]
- (b) Using examples other than national parks, evaluate the success of conservation methods such as ecotourism, wildlife management and ecological islands. [30]

[Total: 40]

- 4 Fig. 4.1 shows the major types of waste found in marine ecosystems and information about the potential threats.

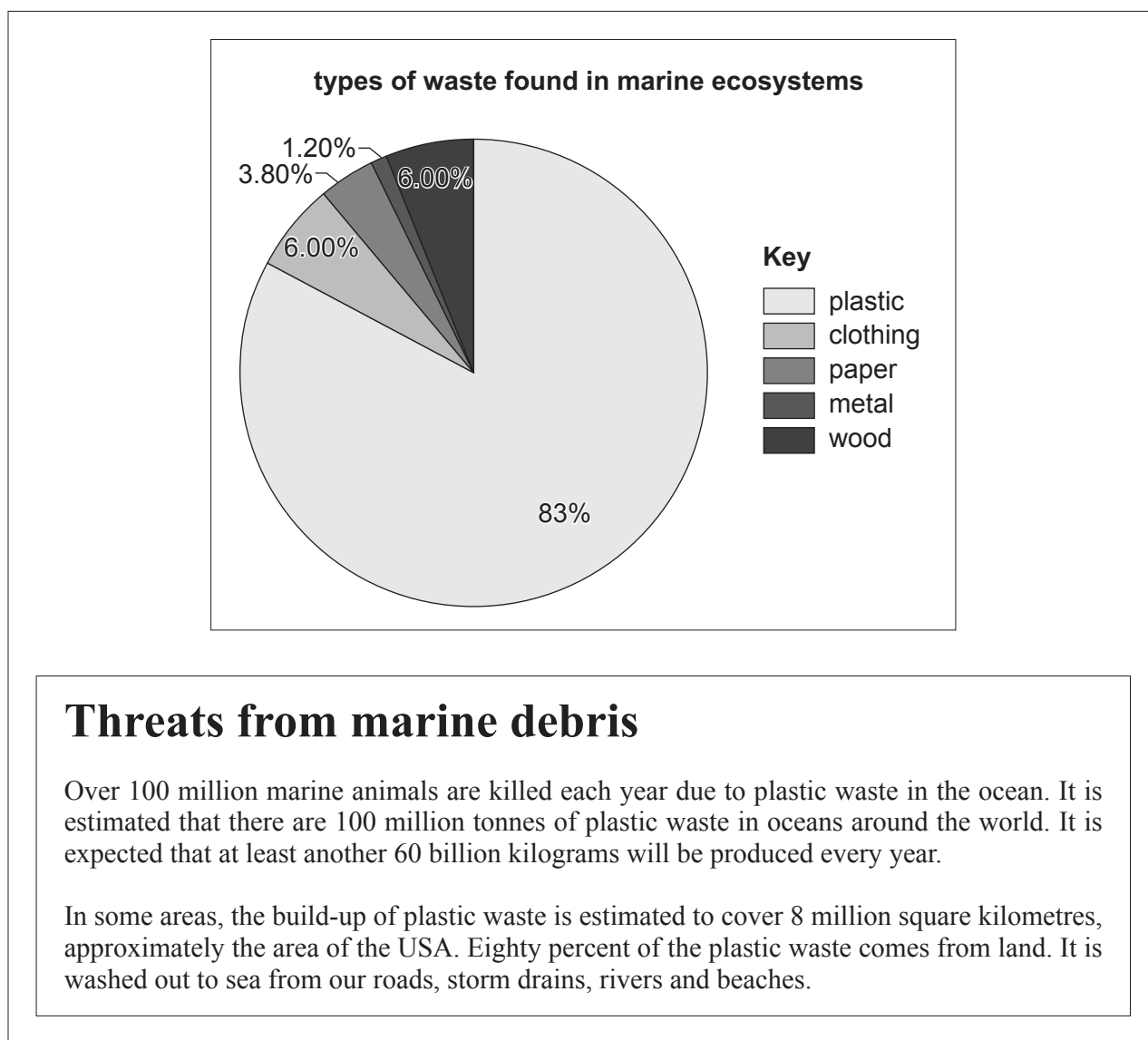


Fig. 4.1

- (a) With reference to Fig. 4.1, suggest the likely effects of plastic waste on marine species. [10]
- (b) Using examples evaluate the strategies used to manage the problems caused by different sources of marine pollution. [30]

[Total: 40]

- 5 Fig. 5.1 shows the area of susceptible drylands in each continent, and the main causes of soil deterioration in these areas.

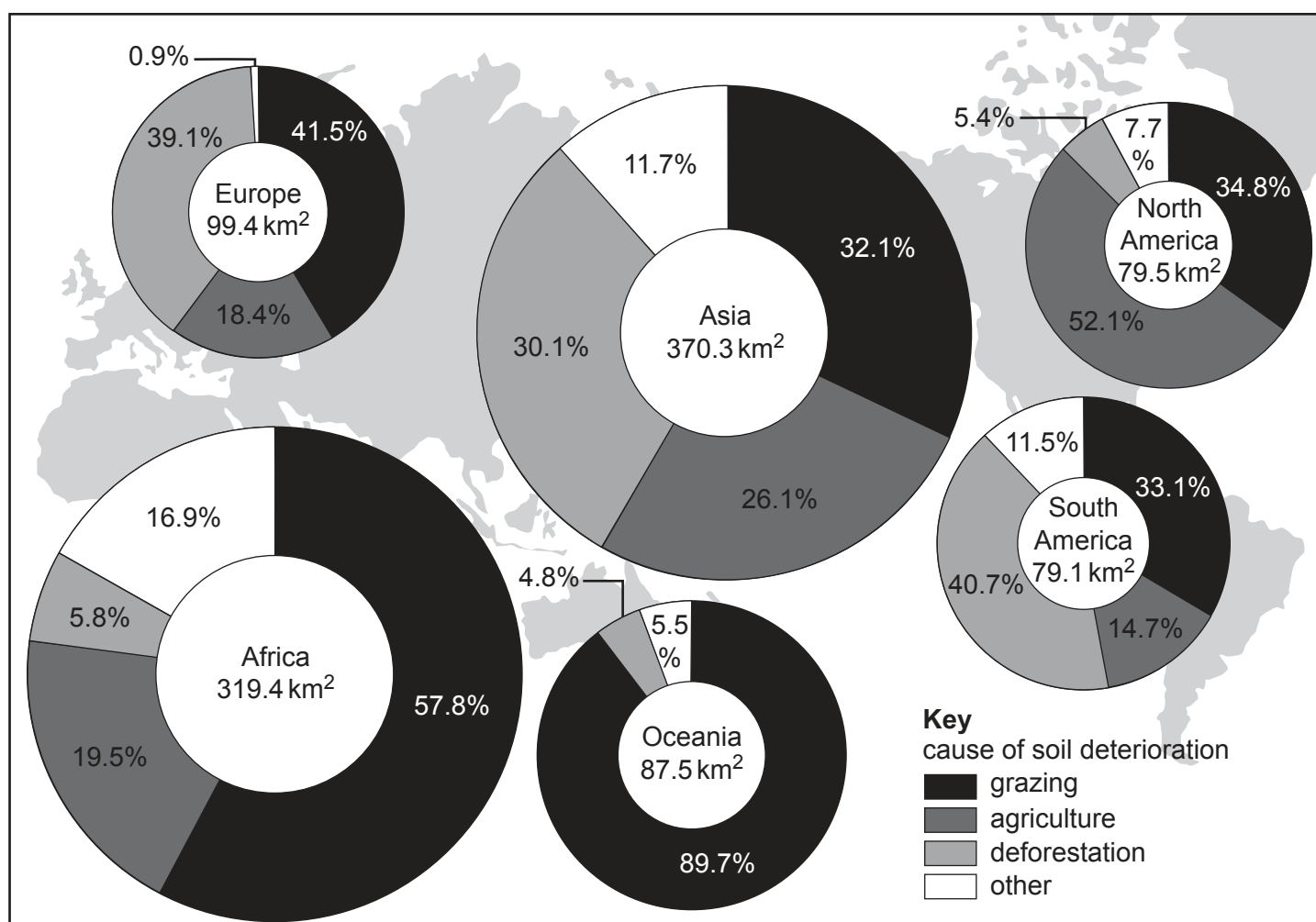


Fig. 5.1

- (a) With reference to Fig. 5.1, describe the regional variation of the causes of soil deterioration. Suggest reasons for the regional variation described. [10]
- (b) Using examples, discuss how countries with different levels of economic development might prevent the loss of local habitats as a result of agricultural practices. [30]

[Total: 40]

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