



NSW Education Standards Authority

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Centre Number

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Student Number

2023 HIGHER SCHOOL CERTIFICATE EXAMINATION

Geography

General Instructions

- Reading time – 5 minutes
- Working time – 3 hours
- Write using black pen
- Calculators approved by NESA may be used
- A Stimulus Booklet is provided with this paper
- Write your Centre Number and Student Number at the top of this page

Total marks: 100

Section I – 20 marks (pages 2–7)

- Attempt Questions 1–20
- Allow about 35 minutes for this section

Section II – 40 marks (pages 9–20)

- Attempt Questions 21–25
- Allow about 1 hour and 10 minutes for this section

Section III – 40 marks (page 21)

- Attempt TWO questions from Questions 26–28
- Allow about 1 hour and 15 minutes for this section

Section I

20 marks

Attempt Questions 1–20

Allow about 35 minutes for this section

Refer to the Stimulus Booklet

Use the multiple-choice answer sheet for Questions 1–20.

Refer to Source *A* on page 1 of the Stimulus Booklet to answer Question 1.

- 1** What type of graph is shown?
- A. Scatterplot
 - B. Choropleth
 - C. Divided column
 - D. Frequency distribution
- 2** Which of the following is a sociocultural factor affecting economic activity?
- A. Quotas
 - B. Transportation
 - C. Mobility of capital
 - D. Changing lifestyles

Refer to Source *B* on page 1 of the Stimulus Booklet to answer Questions 3–4.

- 3** How much waste would the global olive oil industry produce in a five-year period?
- A. 6 million m³
 - B. 30 million m³
 - C. 150 million m³
 - D. 160 million m³

- 4 Which of the following sets of UN Sustainable Development Goals (SDGs) best relates to the olive oil industry, as presented in Source B?

A.   

B.   

C.   

D.   

- 5 A local Aboriginal business leads cultural tours through an ecosystem.

Which TWO principles of ecosystem management and protection are demonstrated by this activity?

- A. Heritage values, utility values
- B. Heritage values, maintenance of genetic diversity
- C. Need to allow natural change to proceed, utility values
- D. Need to allow natural change to proceed, maintenance of genetic diversity

Refer to Source *C* on page 1 of the Stimulus Booklet to answer Question 6.

- 6 Which of the following shows one complete path that carbon can flow through the olive oil enterprise?
- A. Air → olives → solids → CO₂ storage
 - B. Air → olives → waste water → CO₂ storage
 - C. Air → trees → olives → solids → solid waste → CO₂ storage
 - D. Air → trees → waste water → solids → solid waste → CO₂ storage

Refer to Source *D* on page 2 of the Stimulus Booklet to answer Question 7.

- 7 Some New York landmarks clearly express aspects of its culture of place.

Which row of the table best expresses the aspects of street life and heritage architecture?

	<i>Street life</i>	<i>Heritage architecture</i>
A.	New York Stock Exchange	Empire State Building
B.	New York Stock Exchange	One World Trade Center
C.	Times Square	Empire State Building
D.	Times Square	One World Trade Center

Refer to Source *D* and Source *E* on page 2 of the Stimulus Booklet to answer Question 8.

- 8 The photographer of Source *E* was facing a bearing of approximately
- A. 45°.
 - B. 90°.
 - C. 225°.
 - D. 270°.
- 9 What is a major reason for contemporary counterurbanisation in developed countries?
- A. The demise of small towns
 - B. A reduction in urban pollution
 - C. An increase in urban green space
 - D. The opportunity of working from home

Refer to Source *G* on page 3 of the Stimulus Booklet to answer Questions 10–14.

- 10** What is the density of schools in AR 1514?
- A. 6 per km²
 - B. 11 per km²
 - C. 12 per km²
 - D. 13 per km²
- 11** What is the elevation of ‘The Pond’ in the south corner of Central Park?
- A. 5 m
 - B. 8 m
 - C. 11 m
 - D. 22 m
- 12** Approximately how many minutes would it take to walk around the edge of Jacqueline Kennedy Onassis Reservoir at 5 km/h?
- A. 35
 - B. 55
 - C. 75
 - D. 95
- 13** What is the gradient from the Lookout down to Point Z in the north of Central Park?
- A. 1:2.7
 - B. 1:3.4
 - C. 1:6.7
 - D. 1:7.4
- 14** What is the approximate ratio of river to land in the topographic map extract? (Assume that land includes the water bodies in Central Park.)
- A. 1:4.5
 - B. 1:7.0
 - C. 1:10.5
 - D. 1:14.0

Refer to Source *H* on page 4 of the Stimulus Booklet to answer Question 15.

15

$$\text{Net loss} = \text{loss} - \text{gain}$$

What was the net loss of forests in millions of hectares between 2010 and 2020?

- A. 41
- B. 48
- C. 53
- D. 60

Refer to Source *A* on page 1 of the Stimulus Booklet to answer Question 16.

16 What is the predicted growth in olive oil revenue for Europe between 2015 and 2025?

- A. \$1.3 billion
- B. \$1.8 billion
- C. \$2.6 billion
- D. \$5.2 billion

Refer to Source *G* on page 3 of the Stimulus Booklet to answer Question 17.

17 What is the latitude and longitude of the police department next to the Jacqueline Kennedy Onassis Reservoir?

- A. $40^{\circ}46'59''\text{N}, 73^{\circ}57'09''\text{W}$
- B. $40^{\circ}46'59''\text{N}, 73^{\circ}57'51''\text{W}$
- C. $40^{\circ}48'49''\text{N}, 73^{\circ}57'09''\text{W}$
- D. $40^{\circ}48'49''\text{N}, 73^{\circ}57'51''\text{W}$

Refer to Source *F* on page 2 and Source *G* on page 3 of the Stimulus Booklet to answer Questions 18–19.

18 A helicopter flies SSW from point Y on Source *F*.

What feature does it fly over?

- A. Carnegie Hall
- B. Central Park Zoo
- C. The Metropolitan Museum of Art
- D. American Museum of Natural History

19 What is the approximate scale of Source *F*?

- A. 1 : 3300
- B. 1 : 16 000
- C. 1 : 25 000
- D. 1 : 30 000

Refer to Source *I* on page 4 of the Stimulus Booklet to answer Question 20.

20 What is a likely reason for the percentage of wild grasslands and shrubs increasing at different times in the last 10 000 years?

- A. Agriculture
- B. Deforestation
- C. Climate change
- D. Ecological invasion

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Centre Number

Geography

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Student Number

Section II Answer Booklet

40 marks

Attempt Questions 21–25

Allow about 1 hour and 10 minutes for this section

Instructions

- Write your Centre Number and Student Number at the top of this page.
- Use the Stimulus Booklet and your knowledge of geography to answer Questions 21–25 in the spaces provided. These spaces provide guidance for the expected length of response.
- Show all relevant working in questions involving calculations.
- Extra writing space is provided at the back of this booklet. If you use this space, clearly indicate which question you are answering.

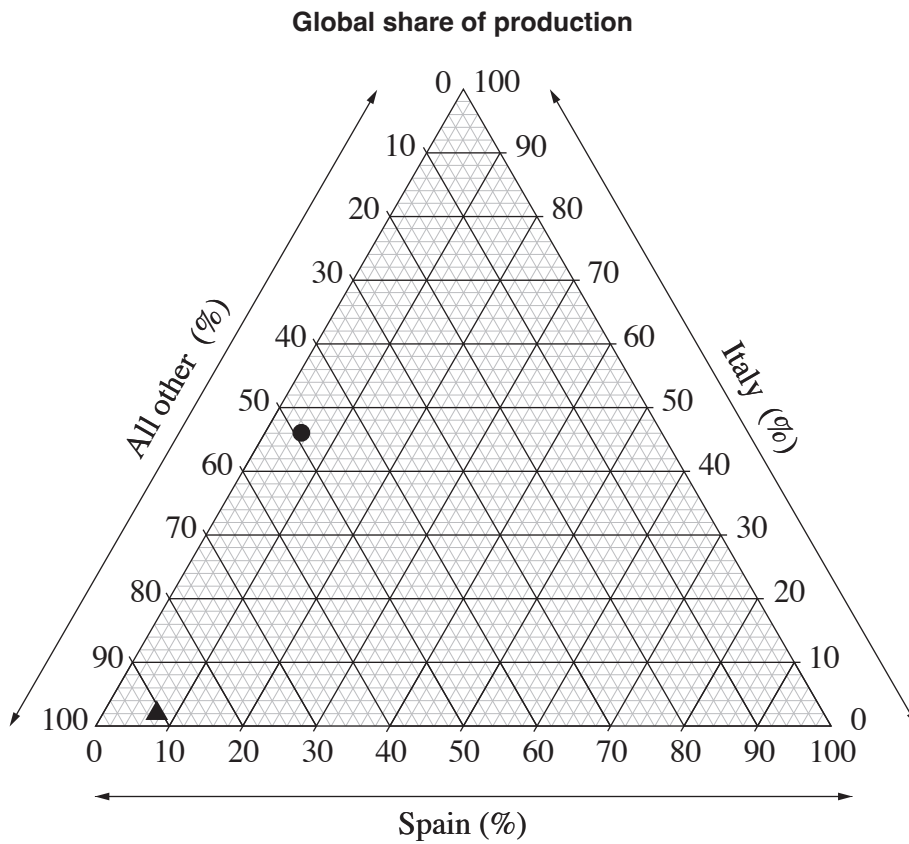
Please turn over

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Question 21 (2 marks)

Refer to the following graph to answer parts (a)–(b).



KEY

Lemons ▲	Vinegar ●
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(a) Complete the table for vinegar production.

1

	<i>Spain</i>	<i>Italy</i>	<i>All other</i>
Olive oil	40%	21%	39%
Lemons	7%	2%	91%
Vinegar	5%	46%	

(b) Using the symbol × and the data in part (a), plot the point for olive oil production on the graph.

1

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Question 22 (11 marks)

(a) Name ONE global economic activity.

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Global economic activity:

Explain ONE change in this global economic activity.

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(b) Name ONE local economic enterprise.

2

Local economic enterprise:

Outline the nature of this local economic enterprise.

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Question 22 continues on page 13

Do NOT write in this area.

Question 22 (continued)

- (c) 'Consumers and companies alike are becoming more interested in making sustainability-focused choices.'

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MCKINSEY AND COMPANY,
Prioritizing sustainability in the consumer sector
5 August 2021

Discuss this statement in relation to the local economic enterprise named in part (b).

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End of Question 22

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Question 23 (11 marks)

- (a) Explain how biophysical interactions result in ONE ecosystem's unique characteristics.

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- (b) Discuss the effects that ONE management strategy has on ecosystem resilience.

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Question 24 (11 marks)

- (a) Why are most new mega cities located in the developing world? **2**

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- (b) Living in a mega city in the developing world creates a number of challenges. **4**

Compare how TWO of these mega cities experience the same challenge.

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Question 24 continues on page 17

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Question 24 (continued)

(c) 'Urban dynamics favour the wealthy.'

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With reference to the quote, explain how urban dynamics have resulted in spatial patterns of advantage and disadvantage in ONE large city from the developed world.

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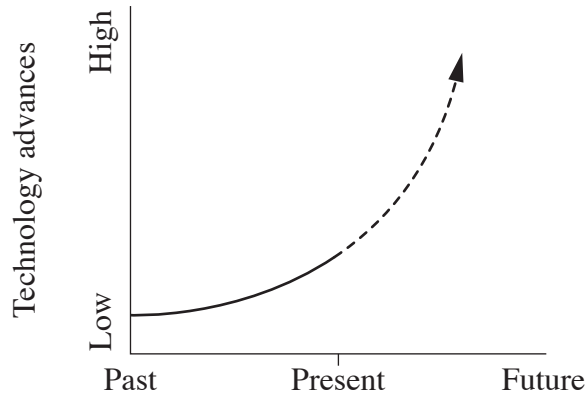
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End of Question 24

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Question 25 (5 marks)

The graph shows a global trend in technology advances.



Explain how the trend shown in the graph can have a positive effect on ONE of the following topics:

5

- Ecosystems at risk
- Urban places
- People and economic activity.

Topic:

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Section II extra writing space

If you use this space, clearly indicate which question you are answering.

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Geography

Section III

40 marks

Attempt TWO questions from Questions 26–28

Allow about 1 hour and 15 minutes for this section

Answer both questions in the Section III Writing Booklet. Extra writing booklets are available.

Your answers will be assessed on how well you:

- demonstrate geographical knowledge and understanding relevant to the question
 - communicate ideas and information using geographical terms and concepts appropriately
 - refer to case studies, illustrative examples and the Stimulus Booklet where appropriate
 - present a sustained, logical and cohesive response
-

Question 26 (20 marks)

Discuss the impacts of global economic activity.

In your answer, refer to a global economic activity you have studied. You may also refer to the global olive oil industry shown on page 1 of the Stimulus Booklet.

Question 27 (20 marks)

Analyse the character of world cities.

In your answer, refer to world cities you have studied. You may also refer to the information on New York City shown on page 2 of the Stimulus Booklet.

Question 28 (20 marks)

To what extent have humans had negative impacts on ecosystems?

In your answer, refer to ecosystems you have studied. You may also refer to the information on forests and land cover shown on page 4 of the Stimulus Booklet.

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Source A – Global olive oil market revenue over time

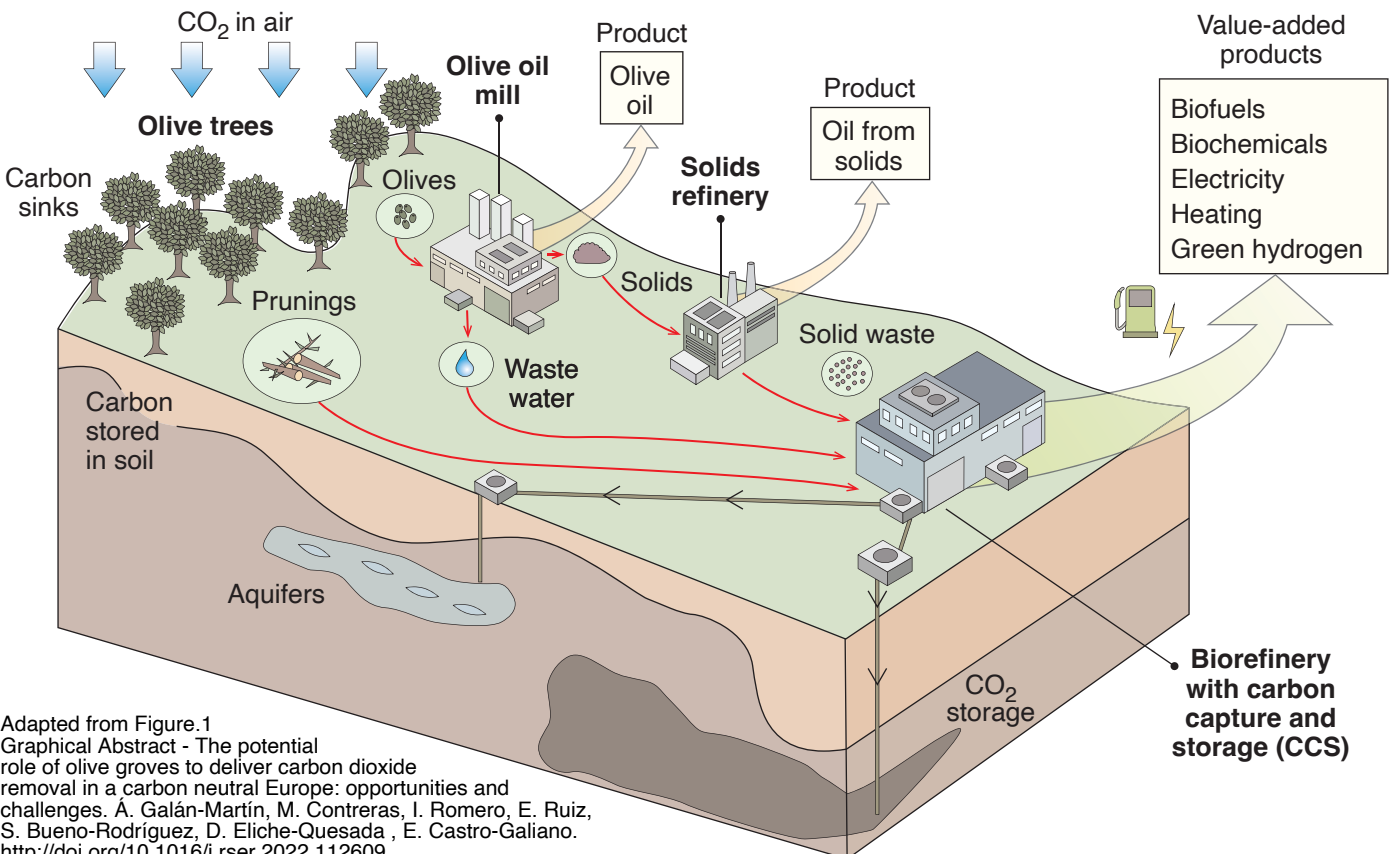
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Source B – Impacts of the global olive oil industry

Impact	Description
Social	<ul style="list-style-type: none"> Traditional part of the Mediterranean diet Health benefits such as improved heart and brain health, reduced inflammation and blood pressure Used in personal care and pharmaceutical products
Economic	<ul style="list-style-type: none"> Employs around 30% of agricultural workers in rural Mediterranean areas Growing employer in the USA and Australia
Environmental	<ul style="list-style-type: none"> Produces 32 million m³ of waste per year Waste often disposed of in an uncontrolled manner and can cause acidity and water retention issues in agricultural soils Uses vast amounts of water in its production; estimated to use 3900 litres of water to produce 1 litre of olive oil

Source C – 3D diagram of a sustainability-focused olive oil enterprise

Olive oil is produced by pressing whole olives and extracting the liquid oil.



Source D – Pictorial map of lower Manhattan, New York City



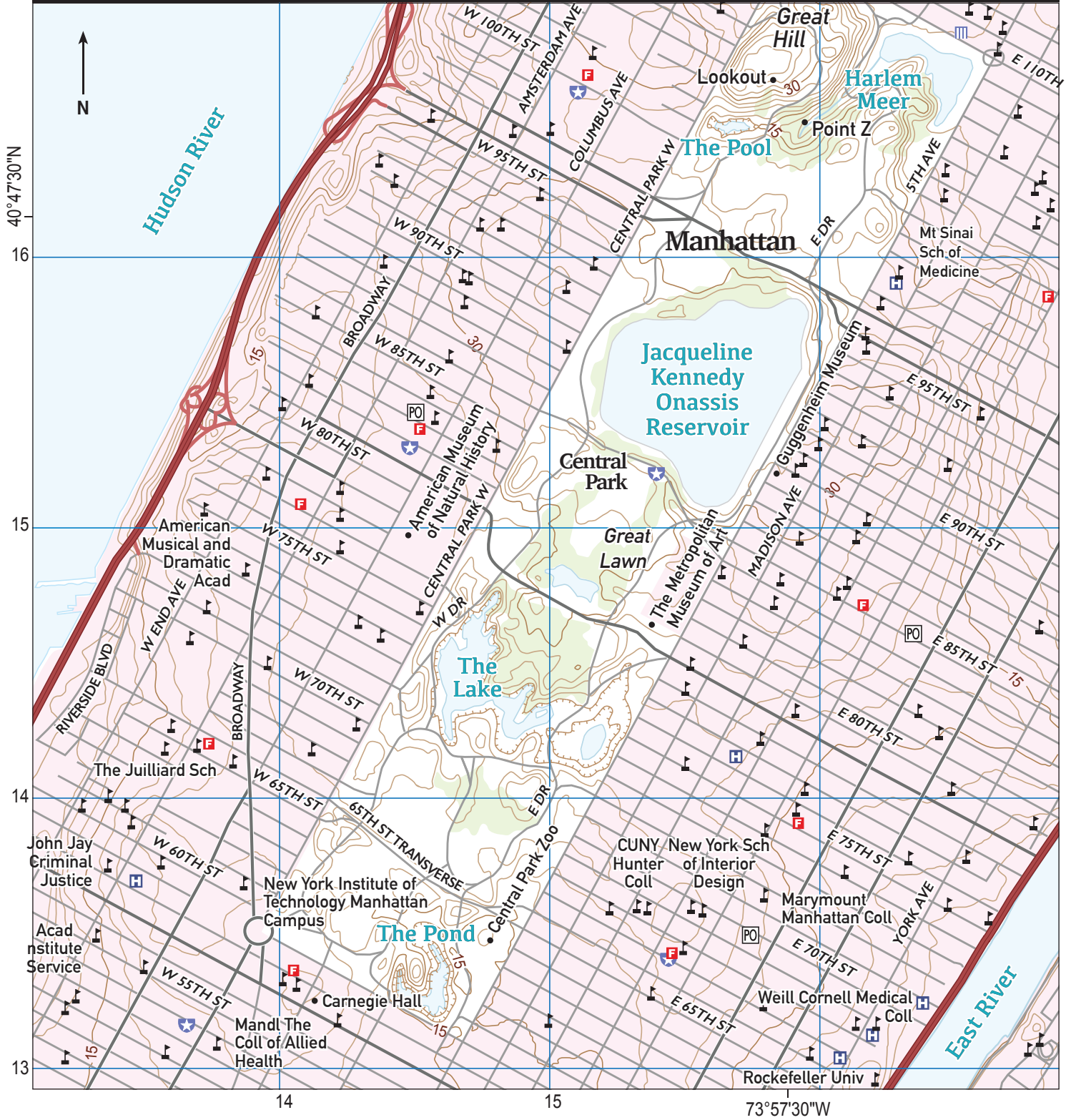
Source E – Photograph of New York City



Source F – Distorted aerial photograph of New York City

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Source G – Topographic map extract of New York City

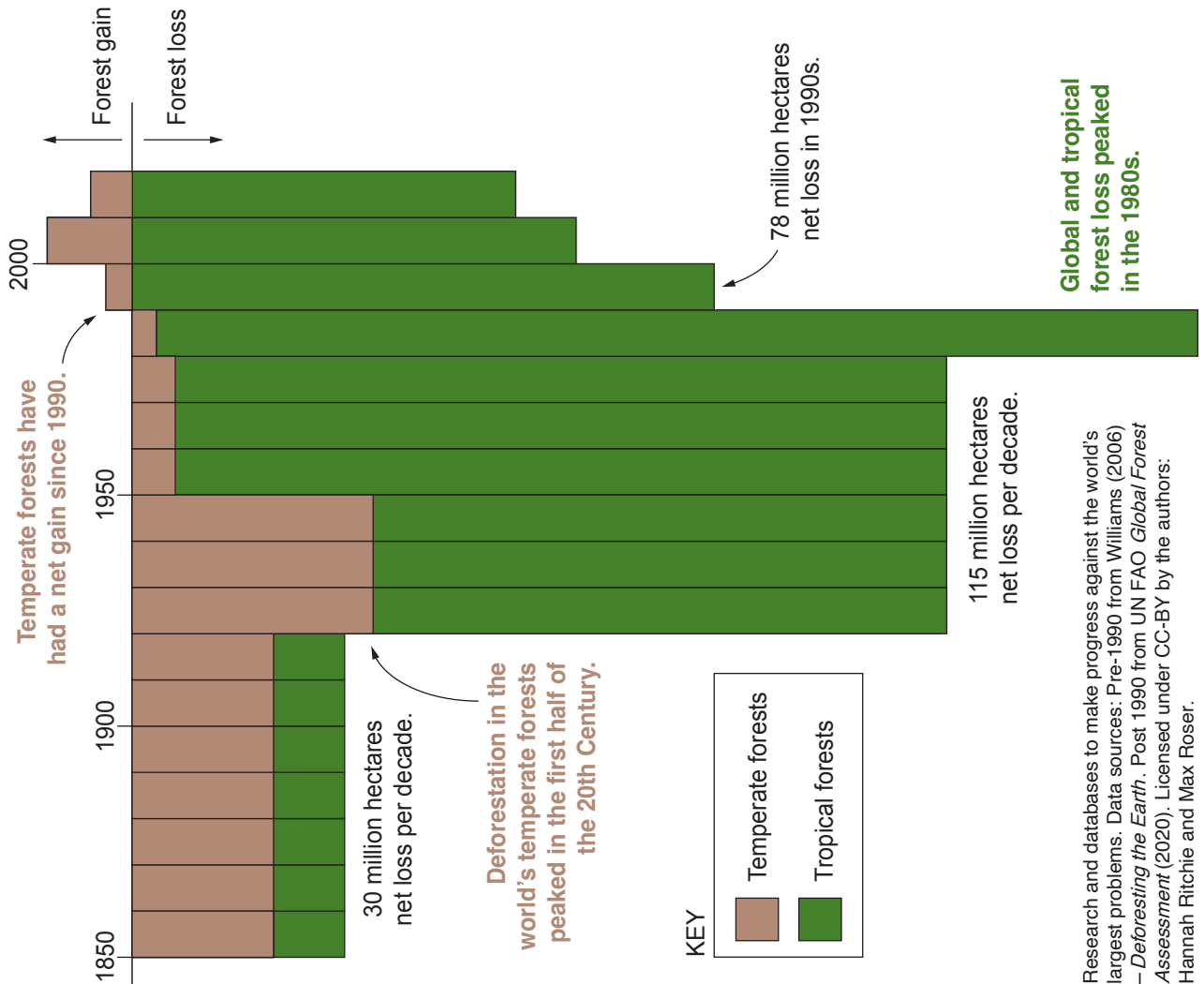


Key

Expressway		Prison, post office		Built up area	
Ramp		Fire department, hospital		Body of water	
Local connector		School, police department		Green space	
Local road		Place of interest		Dense woodland	
Contour					
Depression					
Contour interval:	3 m				
		0	0.5	1 km	

Source H – Global forest losses and gains

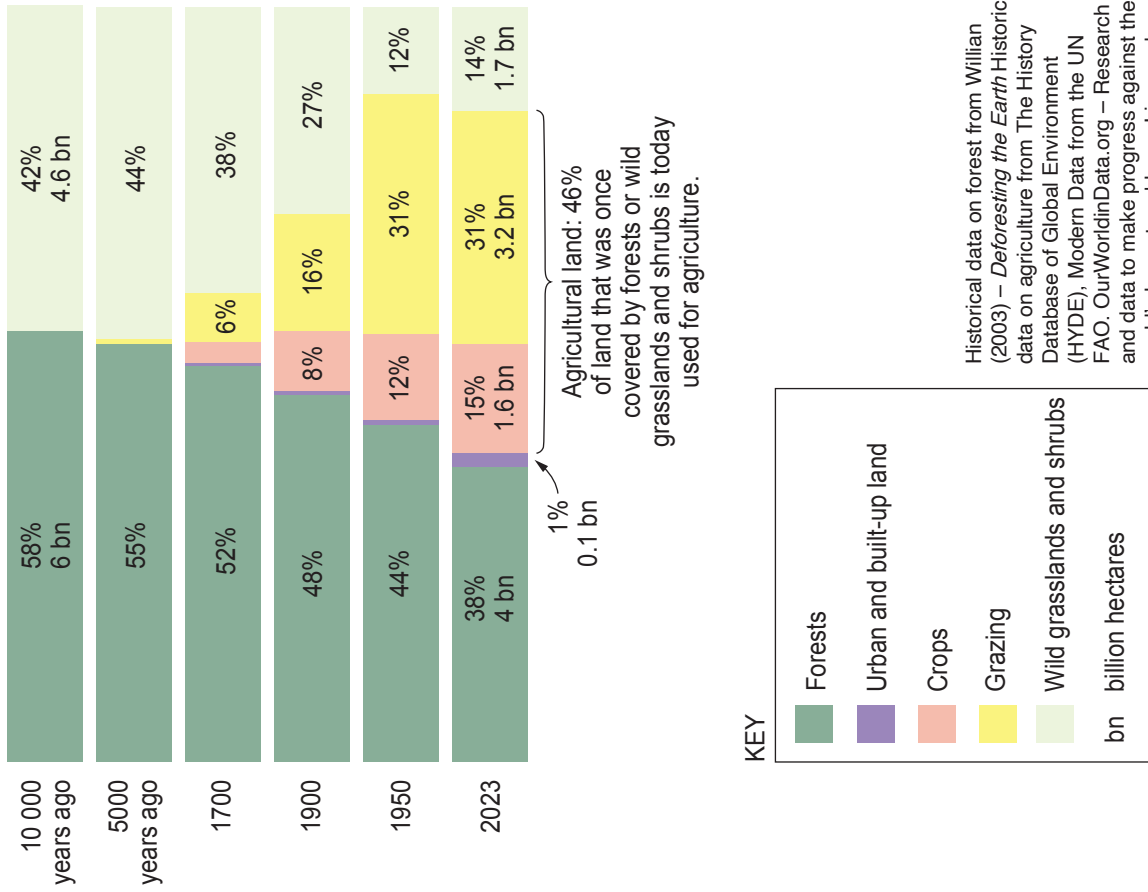
Approximately 1.2 billion hectares of forest were destroyed between 1850 and 2020.



Research and databases to make progress against the world's largest problems. Data sources: Pre-1990 from Williams (2006) – *Deforesting the Earth*. Post 1990 from UN FAO *Global Forest Assessment* (2020). Licensed under CC-BY by the authors: Hannah Ritchie and Max Roser.

Source I – Global changes in land cover

One third of the world's forests have been destroyed by humans expanding their use of land for agriculture.



Historical data on forest from Willian (2003) – *Deforesting the Earth* Historical data on agriculture from The History Database of Global Environment (HYDE), Modern Data from the UN FAO, OurWorldinData.org – Research and data to make progress against the world's largest problems. Licensed under CC-BY by the authors: Hannah Ritchie and Max Roser.